PENTIUM PCI/ISA

ATX Form PCI & ISA Bus Pentium Mainboard On Board PCI Master IDE, Multi-I/O, VGA.

R558

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Users Manual

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Introduction

Welcome to the M-Technology next generation high performance
Pentium system mainboard --- **R-558.** The R-558 using the high
performance SIS 5598/5582 Chipset that will deliver superior
performance on your personal computer.

About This User's Guide

This User's Guide is for assisting system manufacturers and end users
in setting up and installing the mainboard. Information in this guide has
been carefully checked for reliability; however, there may
still be inaccuracies and information in this document is subject to
change without notice.

DISCLAIMER

The information in this manual has been carefully checked and is
believed to be accurate. We assumes no responsibility for any
inaccuracies that may still be contained in this manual. We reserves
the right to make changes to this material at any time without notice.

※ All Brand names are trademarks of their owners.

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∗ Our home page on Internet "http: //www.mtiusa.com"

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1. INTRODUCTION

1.1. Preface

Welcome to use the R-558 Pentium system mainboard. This manual explains how to use this mainboard and install upgrades. It has overview of the design and features of the board and provides useful information on the configuration of the board, or a system in which.

1.2. Key Features

The R-558 Pentium system mainboard is a high-performance system board that support Intel Pentium family CPUs, Cyrix, AMD and other compatible CPUs.
There has many performance and system features integrated onto the mainboard, including the following :

❑ CPU : Supports Socket 7 for
- Intel Pentium 90 to 233 MHz, P55C (MMX).
- Cyrix / IBM 6x86, 6x86L, 6x86MX (M2),
- AMD K5, K6 .
and other compatible CPUs.

❑ Chipset : SiS 5598/5582

❑ Supports true 64 bits CACHE and DRAM access mode.

❑ Supports 512K Pipelined Burst SRAM in second Level Cache.

❑ CPU L1/L2 Write-Back Cache operation.

❑ Supports 4x72-pin SIMM Sockets and 2 x 168-pin DIMM SDRAM or DRAM Sockets.
- The Memory Capacity from 4MB to 384MB.
- Supports FP(Fast Page), EDO(Extended Data Out) Mode DRAM and SDRAM.

❑ Four 16-bit ISA Slots and Four 32-bit PCI Master Mode Slots.

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❏ Embeded 64-bit SVGA Chip (optional, SiS 5598 Chipset only)
  - High performance 64-bit GUI accelerator with excellent video playback
    capability
  - System memory shares up to 4MB with video buffer
  - Supports high resolution graphic modes
      1024 x 768 16/256/32K/64K colors, both interlaced and non-interlaced
      1024 x 768 16M colors, interlaced only
      1280 x 1024 16/256 colors, both interlaced and non-interlaced
      1280 x 1024 32K/64K colors, interlaced only

❏ 2 x IDE Connectors for up to 4 IDE Drives.
  - PIO Mode 4 transfers.
  - PCI Bus Master Mode IDE interface.
  - Supports Ultra DMA.

❏ On-board I / O support :
  - 2 Serial Port Connectors (16550 Fast UART compatible).
  - 1 Parallel Port Connector (with EPP and ECP capabilites).
  - 1 Floppy Disk Connector (Supports 2 FD Drives).
  - 1 PS/2 Mouse Connector.
  - 1 IrDA Connector.

❏ Universal Serial Bus Controller.
  - Host / HUB Controller.
  - Two USB Ports.
  ※ Now under compatibility testing with different peripheral.

❏ Flash ROM BIOS with Green, Plug and Play Features

❏ ATX Form Factor : 30.4cm x 22cm or 12" x 8.7" (4 Layers).

1.3 R-558 Mainboard Layout
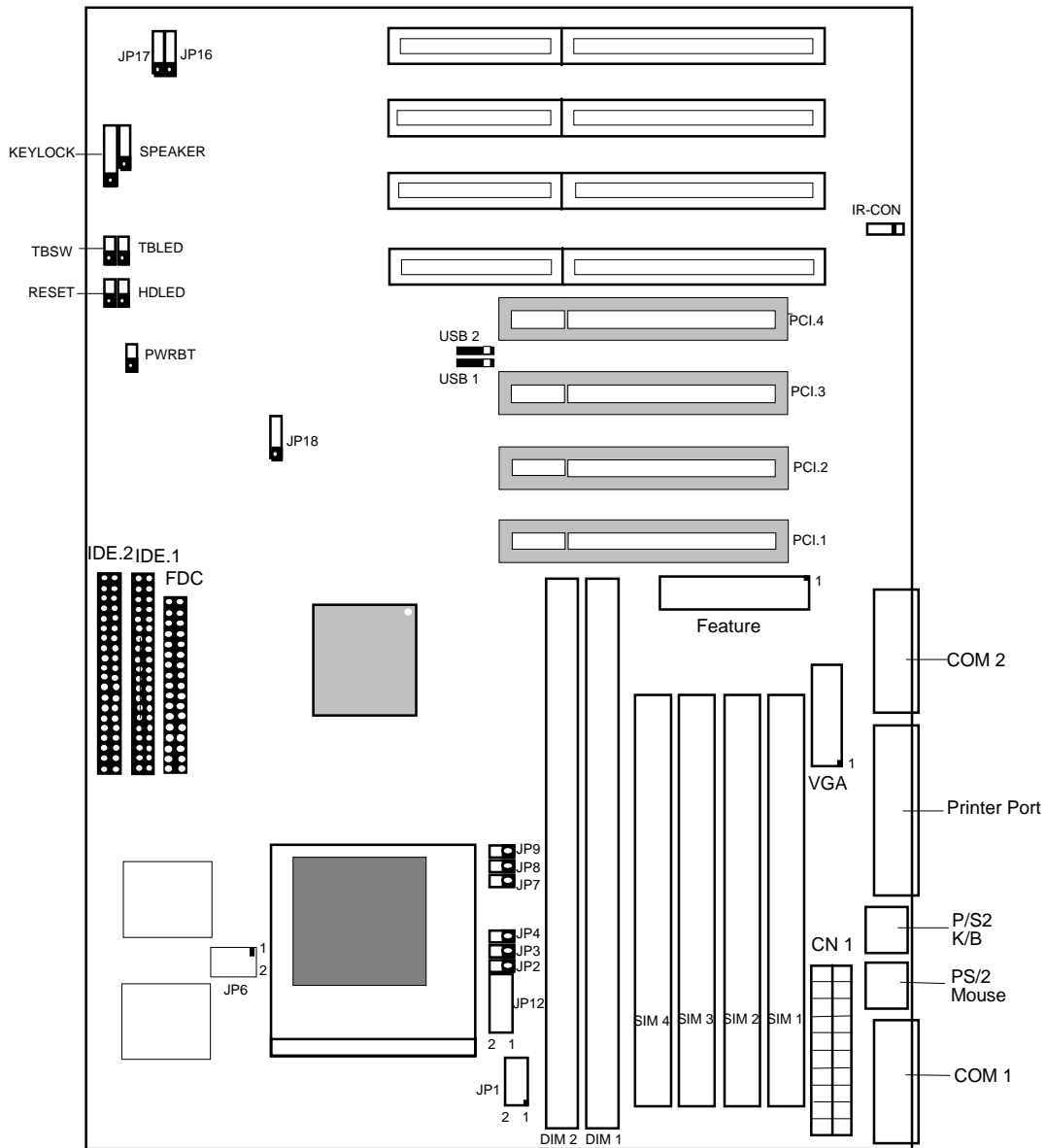
2 HARDWARE INSTALLATION

This chapter explains how to configure the system mainboard hardware. After you install the main board, you can set jumpers and make case connections. Refer to this chapter whenever you upgrade or reconfigure your system.

2.1 Unpacking

The mainboard package should contain the following:

♦ The **R-558** mainboard.

♦ USER'S MANUAL for R-558 mainboard.

♦ Cable set for IDE, Floppy , I/O device and VGA.

♦ IDE Driver and VGA Driver CD-ROM (optional)

The mainboard contains sensitive electric components which can be easily damaged by static electricity, so the mainboard should be left in its original packing until it is installed.

Unpacking and installation should be done on a grounded anti-static mat.

The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

Inspect the mainboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the mainboard carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damage.

Press down on all of the socket IC's to make sure that they are properly seated. Do this only on with the board placed on a firm flat surface.

【2】

⚠️ **Do not apply power to the board if it has been damaged.**

You are now ready to install your mainboard. the mounting hole pattern on the mainboard matches the system board.
It is assumed that the chassis is designed for a standard AT mainboard mounting. Place the chassis on the anti-static mat and remove the cover.

Take the plastic clips, Nylon stand-off and screws for mounting the system board, and keep them separate

2.2 Jumper Setting Summary

Regarding hardware settings on the board. They specify configuration options for various features. The settings are made using something called a "Jumper". A jumper is a set of two or more metal pins in a plastic base attached to the mainboard. A plastic jumper "cap" with a metal plate inside fits over two pins to create an electrical contact between them. The contact establishes a hardware setting.

Some jumpers have two pins, other have three or more. The jumper are sometimes combined into sets called jumper "blocks", where all the jumpers in the block must be set together to establish a hardware setting.
The next figures show how this locks.

Jumpers and caps
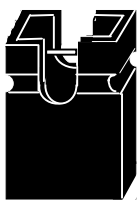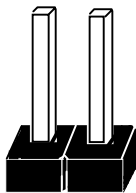
Jumper cap   **2-Pin Jumper**   **3-Pin Jumper**   **Jumper block**
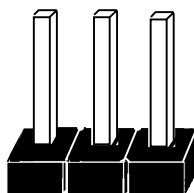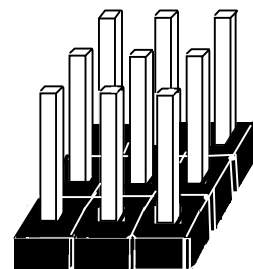
Most jumper setting are printed on the board in a stylized bird's-eye view, with which pins to connect for each setting marked by a bar connecting two pins. For example, if a jumper has three pins, connecting or "closing", the first and second pins creates one setting and closing the second and third pins creates another. The same type of diagrams are used in this manual. The jumpers are always shown from the same point of view as shown in the whole board diagram in this chapter.

Jumpers diagrams

Jumpers are shown like this

(Open)
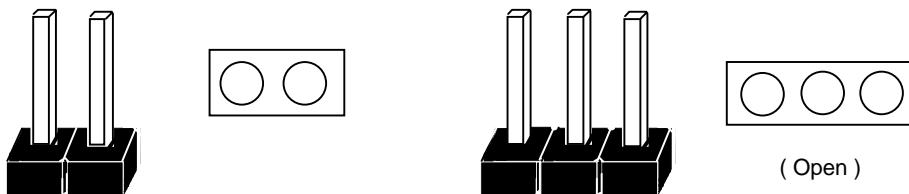
Jumper caps like this
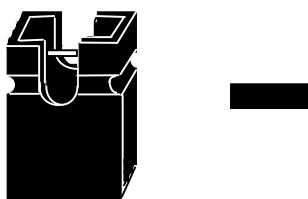
Jumper settings like this

3   1

(Pin 1 & 2 Close)
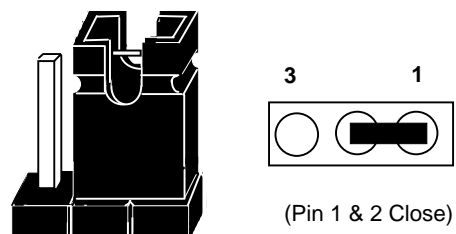
※ The Red colors Jumper for system Voltage setting, and the Yellow colors Jumper for system Clock setting, please careful to change it.

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2.3 CPU Installation

The mainboard supports Pentium class processors up to 233 MHz, If you install the CPU on this board, you must set the **System Clock** (JP7, JP8, JP9), **Frequency Ratio** (JP3, JP4) and **CPU Power Voltage** (JP6, JP12) to meet variable CPU specifications. **(JP2, for Feature Function, The default setting is open)**
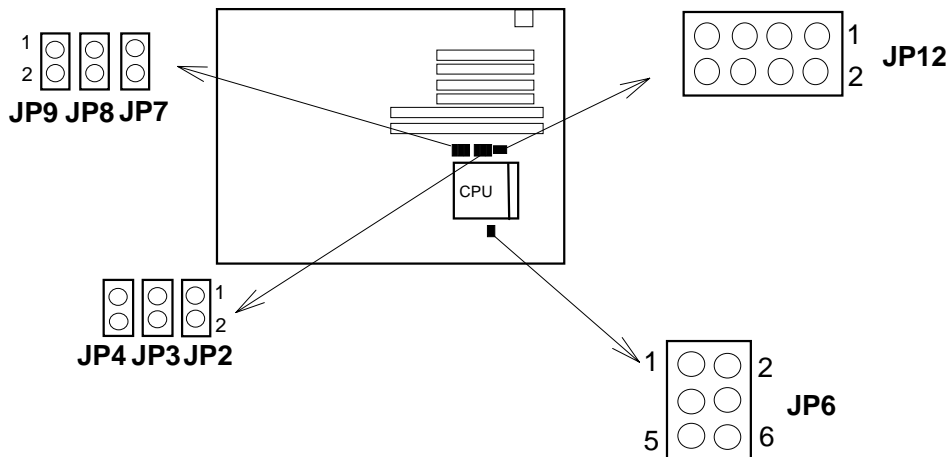
2.3.1. CPU Speed Configuration:

Freq ratio	JP4, JP3,		System freq (MHz)	JP9,JP8,JP7
1.5			55	
2			60	
2.5			66	
3			75	
3.5			83**	

∗ CPU Speed = (Frequency ratio) x (System Frequency).

∗∗ PCI has a maximum bandwidth of 33MHz --- one half of the 66 MHz System Frequency. The 83MHz System Frequency are not supported by the current PCI Rev.2.1 Specification.

2.3.2. CPU Voltage Configuration:

(a) For Single Power CPU. (Intel P54C, Cyrix 6x86, IBM 6x86, AMD 5k86)

CPU Power Voltage		JP6	JP12
I/O	Core		
3.5 V			
3.4 V			

(b) For Dual Power CPU. (Intel P55C (MMX), Cyrix 6x86L/6x86MX(M2)
IBM 6x86L/6x86MX(M2), AMD K6)

CPU Power Voltage		JP6	JP12
I/O	Core		
3.4v	3.2v		
3.4v	2.9v		
3.4v	2.8v		
3.4v	2.1v		

【2】

2.3.3. The CPU Speed & Jumper setting.

(a) Intel Pentium CPU.

CPU Speed	Frequency Ratio			System Clock			
	/	JP3	JP4	MHz	JP7	JP8	JP9
90MHz	3/2	Open	Open	60	Open	Open	Close
100MHz		Open	Open	66	Open	Open	Open
120MHz	2/1	Open	Close	60	Open	Open	Close
133MHz		Open	Close	66	Open	Open	Open
150MHz	5/2	Close	Close	60	Open	Open	Close
166MHz		Close	Close	66	Open	Open	Open
180MHz	3/1	Close	Open	60	Open	Open	Close
200MHZ		Close	Open	66	Open	Open	Open
233MHz	7/2	Open	Open	66	Open	Open	Open

(b) Cyrix 6x86 & 6x86L and IBM 6x86 & 6x86L CPU.

CPU Speed	Frequency Ratio			System Clock			
	/	JP3	JP4	MHz	JP7	JP8	JP9
PR133+		Open	Close	55	Open	Close	Close
PR150+	2/1	Open	Close	60	Open	Open	Close
PR166+		Open	Close	66	Open	Open	Open
PR200+		Open	Close	75	Close	Close	Open

(c) Cyrix 6x86MX(M2) and IBM 6x86MX(M2) CPU.

CPU Speed	Frequency Ratio			System Clock			
	/	JP3	JP4	MHz	JP7	JP8	JP9
PR166		Close	Close	60	Open	Open	Close
PR200	5/2	Close	Close	66	Open	Open	Open
PR200	2/1	Open	Close	75	Close	Close	Open
PR233	3/1	Close	Open	66	Open	Open	Open
PR233	5/2	Close	Close	75	Close	Close	Open
PR266	7/2	Open	Open	66	Open	Open	Open
PR266	3/1	Close	Open	75	Close	Close	Open

※ We recommend the end user to choose the version 2.7 or later of Cyrix/
   IBM 6x86 processor.
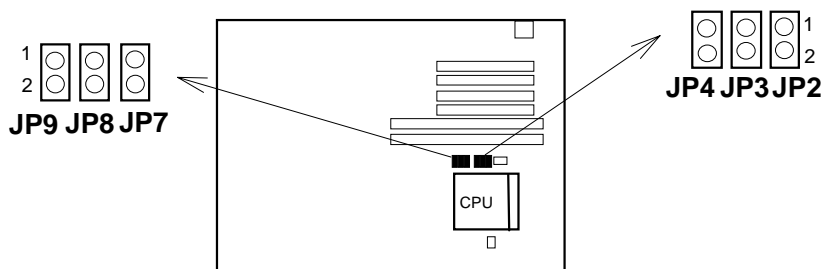
(d) AMD 5k86 CPU.

CPU Speed	Frequency Ratio			System Clock			
	/	JP3	JP4	MHz	JP7	JP8	JP9
P90	3/2	Open	Open	60	Open	Open	Close
P100		Open	Open	66	Open	Open	Open
P166	5/2	Close	Close	66	Open	Open	Open

(e) AMD K6 CPU.

CPU Speed	Frequency Ratio			System Clock			
	/	JP3	JP4	MHz	JP7	JP8	JP9
PR166	5/2	Close	Close	66	Open	Open	Open
PR200	3/1	Close	Open	66	Open	Open	Open
PR233	7/2	Open	Open	66	Open	Open	Open

※ 1. For the AMD K5-PR120/133, it is also allowed to use ratio "x1.5", which is equal to the Intel Pentium 90/100MHz settings.
   2. For the AMD K5-150/160, it use the same settings as the Intel Pentium 150/166MHz processor.

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2.3.4. CPU Type Select Quick Reference :

(a) Intel Pentium CPU.

(1) Intel P54C-90MHz.

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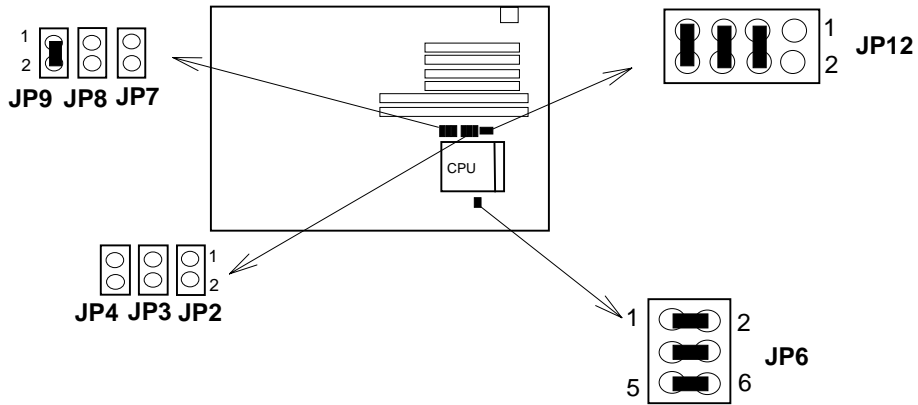
(2) Intel P54C-100MHz.

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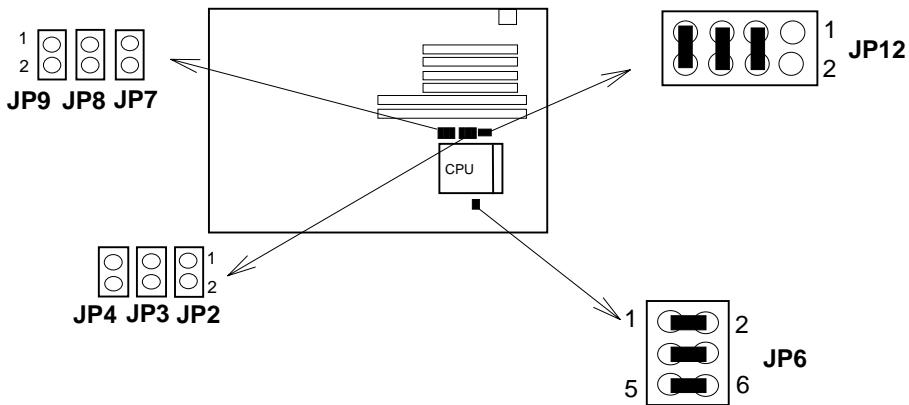
(3) Intel P54C-120MHz.

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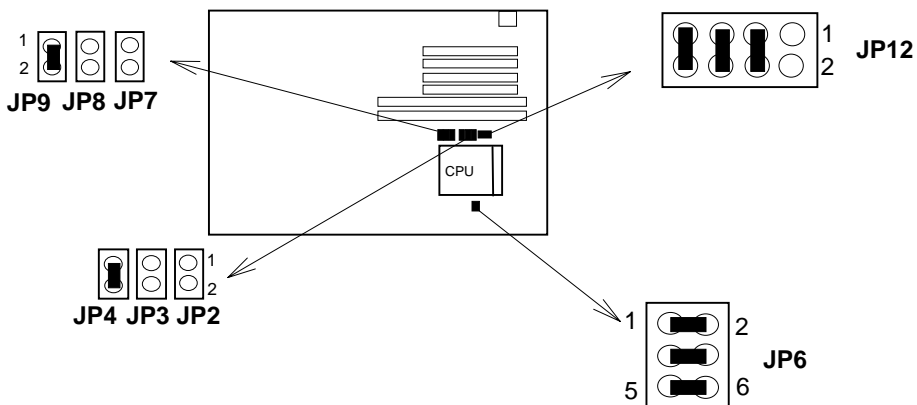
(4) Intel P54C-133MHz.
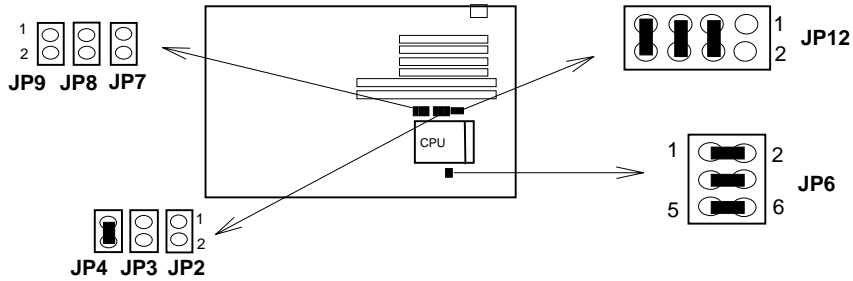
(5) Intel P54C-150MHz.
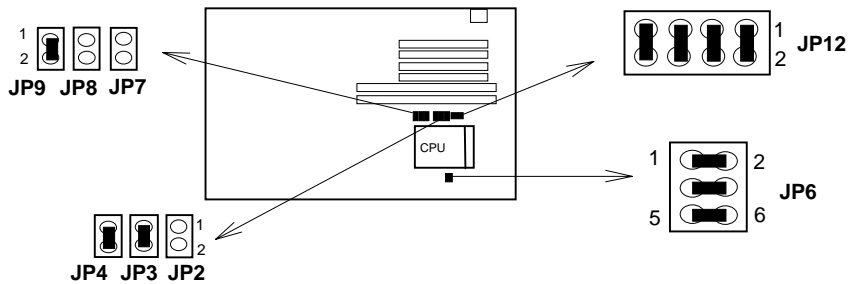
(6) Intel P54C-166MHz.
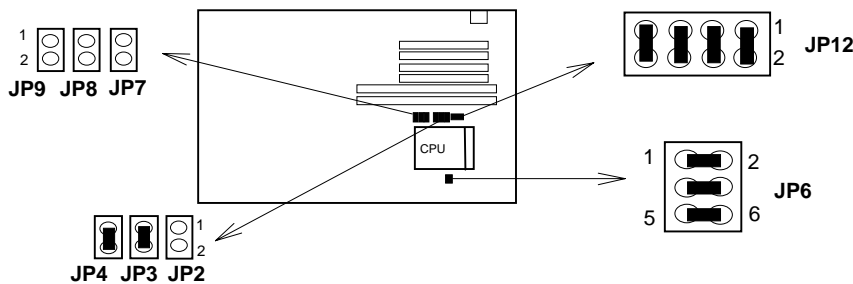
(7) Intel P54C-180MHz.
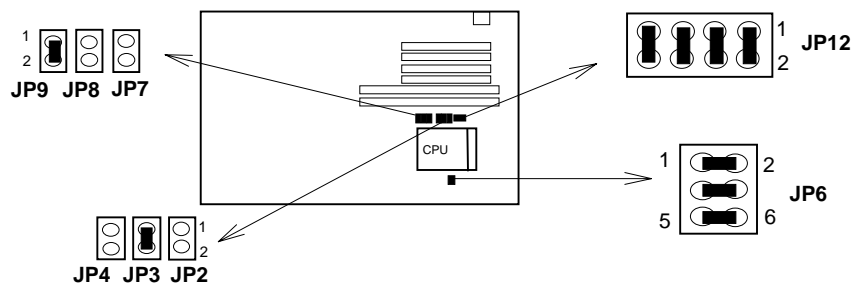
(8) Intel P54C-200MHz.
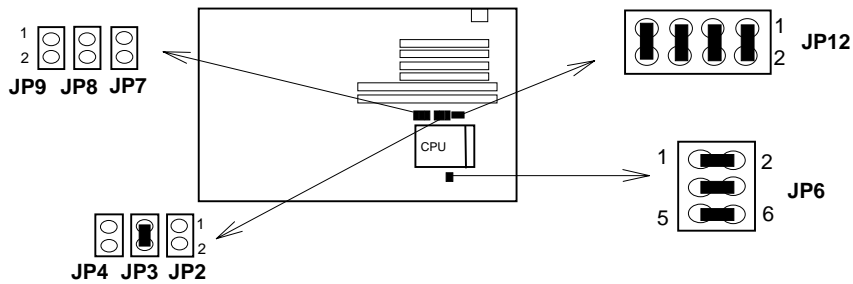
(9) Intel P55C (MMX) -166MHz.
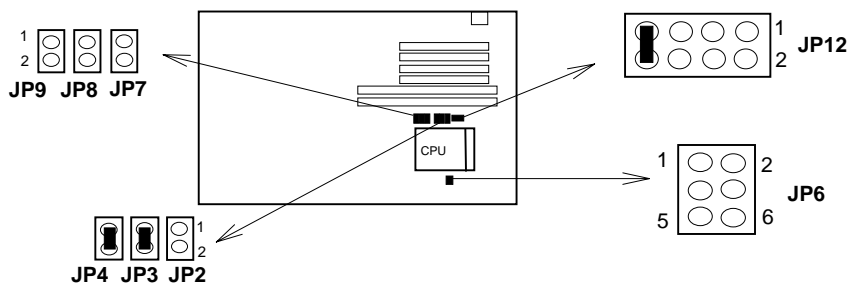
(10) Intel P55C (MMX) -200MHz.
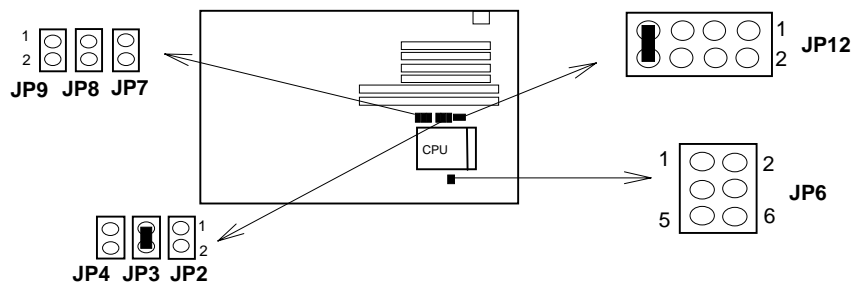
(11) Intel P55C (MMX) -233MHz.
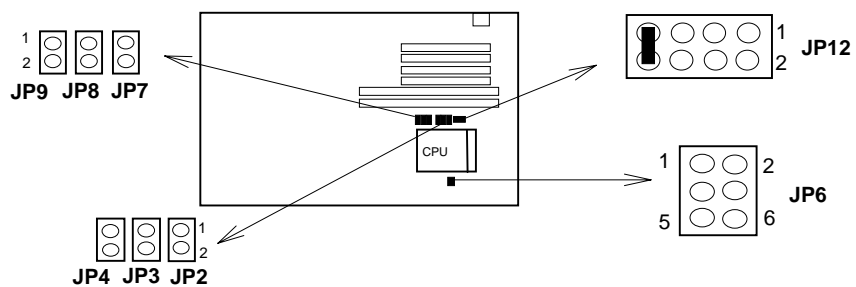
(b) Cyrix 6x86, IBM 6x86 CPU.

(1) 6x86 - PR133+
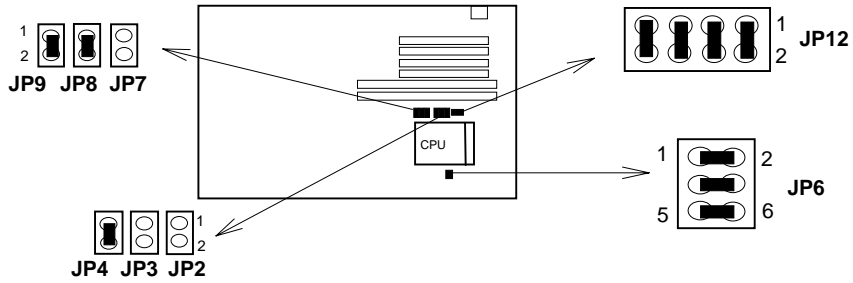
(2) 6x86 - PR150+
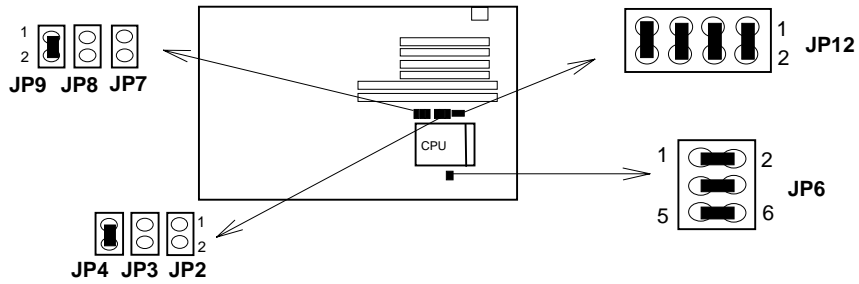
(3) 6x86 - PR166+
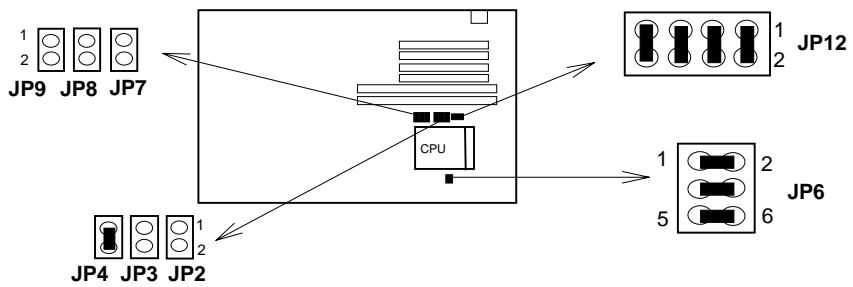
(4) 6x86 - PR200+
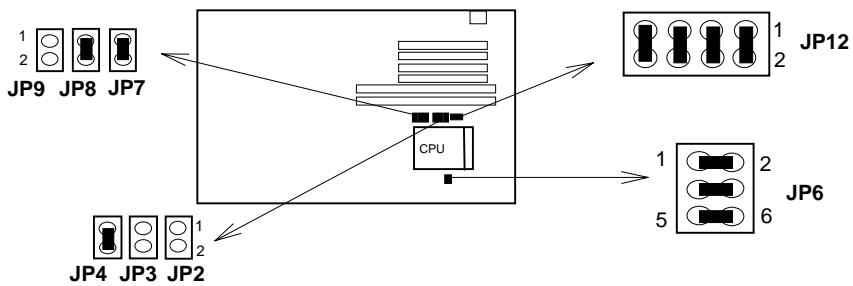
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(c) Cyrix 6x86L & 6x86MX (M2), IBM 6x86L& 6x86MX (M2).

(1) 6x86L - PR166.

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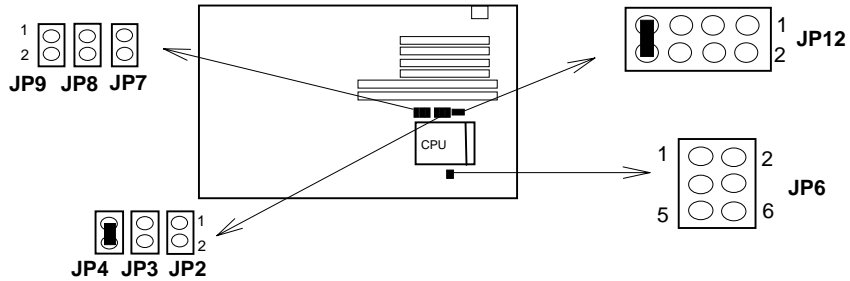
(2) 6x86L - PR200.

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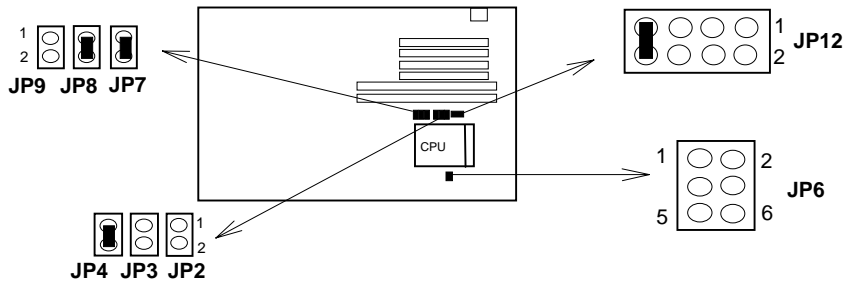
(3) 6x86MX - PR166.

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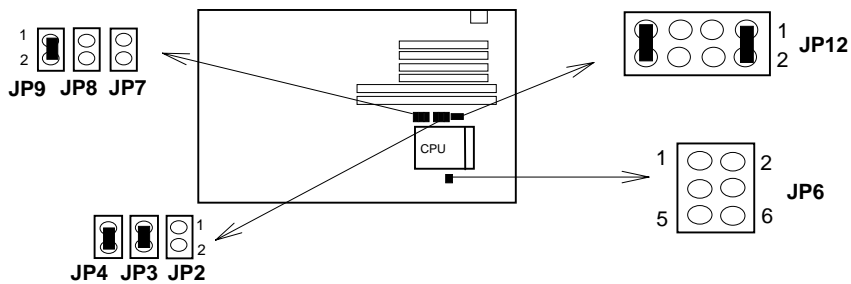
(4) 6x86MX - PR200.

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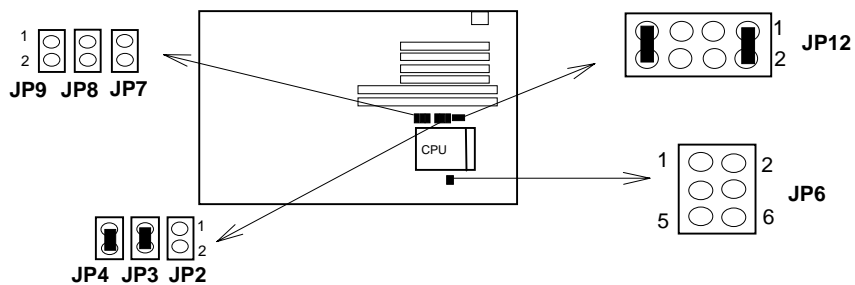
(5) 6x86MX - PR233 (66MHz)

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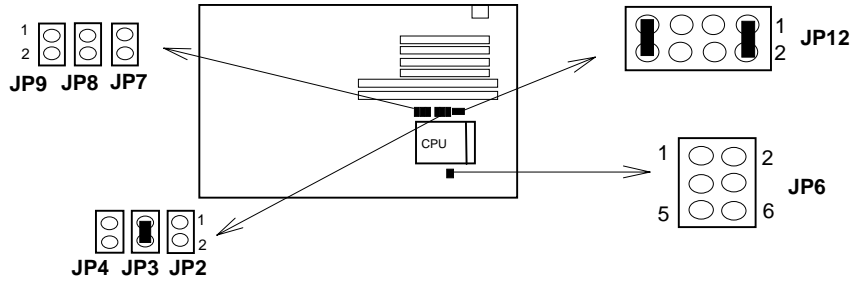
(6) 6x86MX - PR233 (75MHz).

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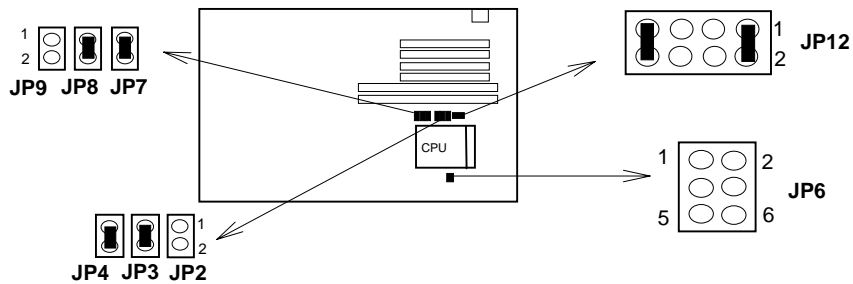
(7) 6x86MX - PR266 (66MHz).

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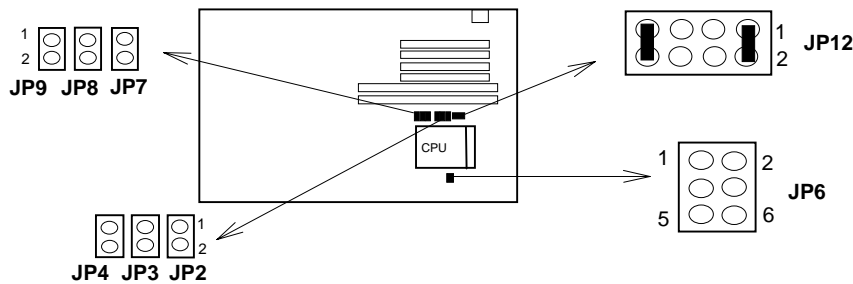
(8) 6x86MX - PR266 (75MHz).

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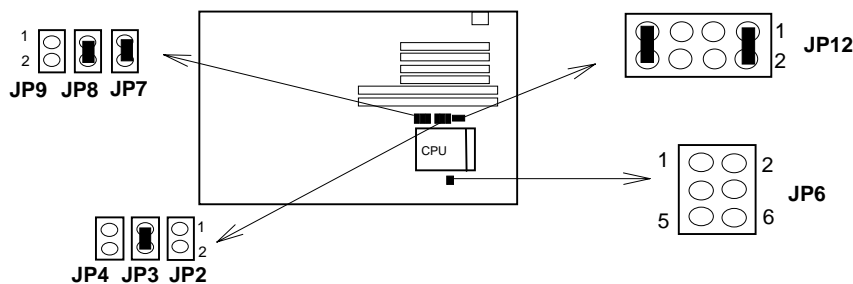
【2】

(d) AMD 5k86 & K6 CPU.

(1) AMD K5 - P90.
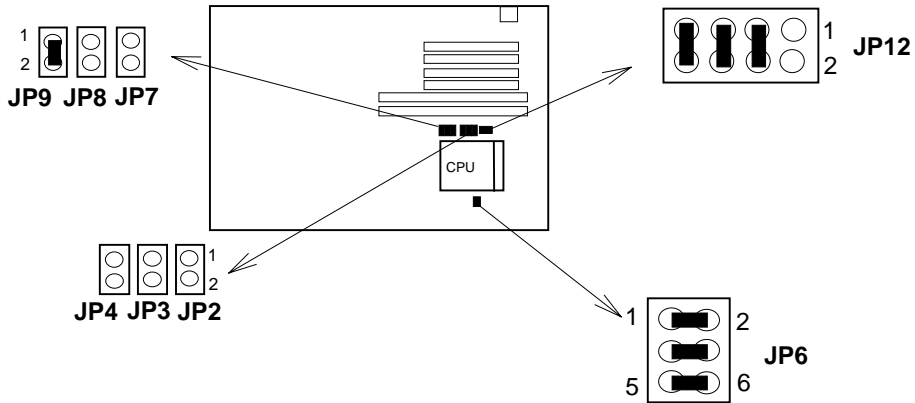
(2) AMD K5 - P100.

(3) AMD K5 - P166.

(4) AMD K6 - P166.

JP9 JP8 JP7

JP12

JP4 JP3 JP2

JP6

(5) AMD K6 - P200.

JP9 JP8 JP7

JP12

JP4 JP3 JP2

JP6

(6) AMD K6 - P233.

JP9 JP8 JP7

JP12

JP4 JP3 JP2

JP6
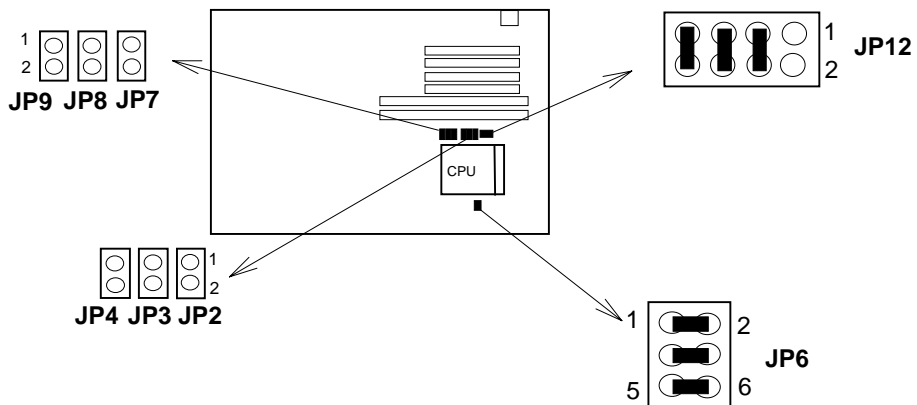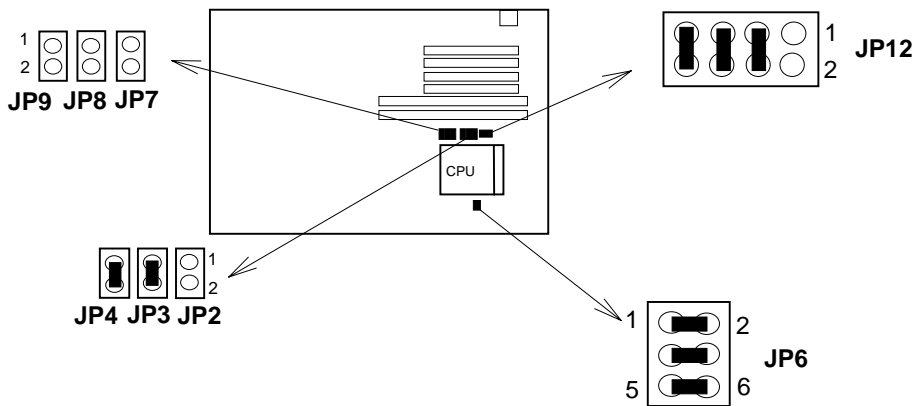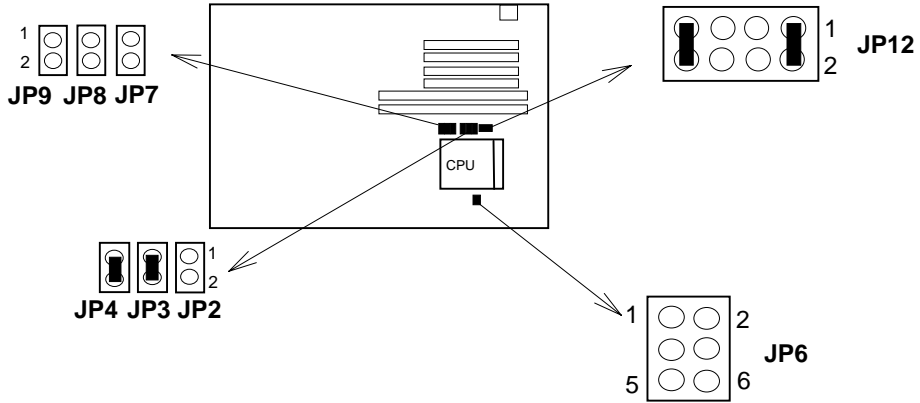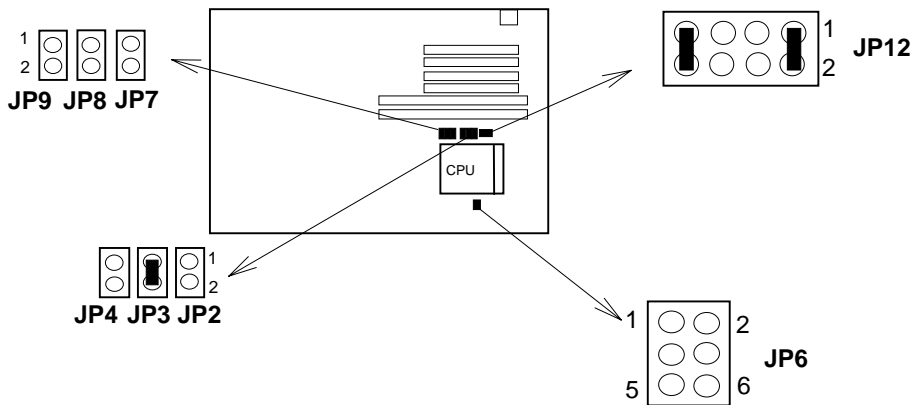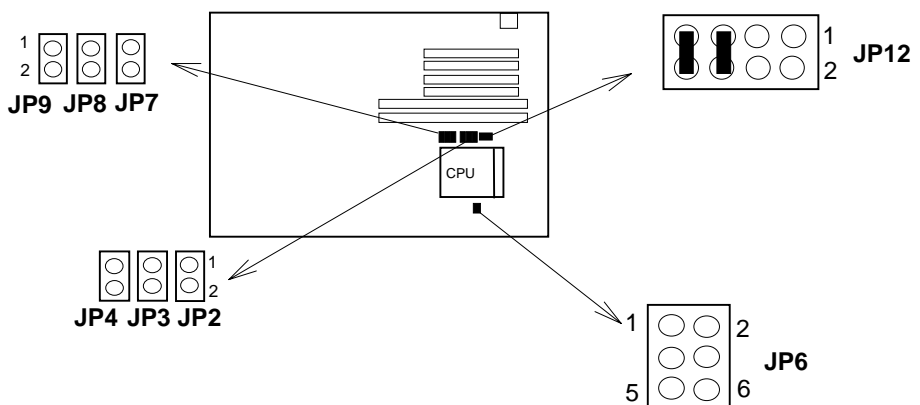
2.3.5. Installing a CPU in the ZIF Socket

The Intel Socket 7 incorporated in the mainboard specifications, is specially designed for the Pentium processor. While inserting the Pentium processor onto Socket 7, certain precautionary steps must be followed. The following diagrams of demonstration and explanation are worth of your note.

1. Make sure the ZIF socket level is up. To raise the lever, pull it out to the side a little and raise it as far as it will go. Pin 1 is at the arm corner.

Pull lever out & up.

Sliding plate
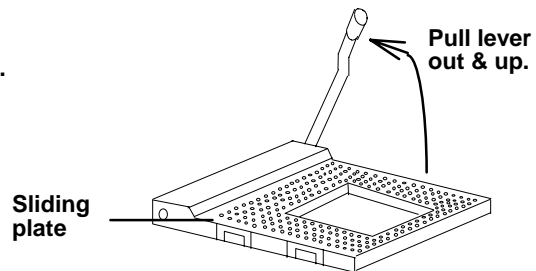
2. Align the CPU and socket pin 1 corners. match the processor corner containing the blunt edge and the white dot to the socket corner with the distinctive pin arrangement. The pins on the bottom should align with the inner 3 rings of holes in the socket, then place the CPU in the socket. It should insert easily. If it doesn't, pull the level up a little more.

Align CPU & insert it

mark Pin 1
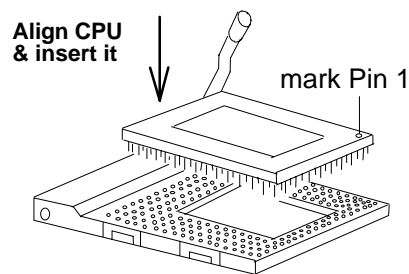
3. Press the lever down. The plate will slide forward. You will feel some resistance as the pressure starts to secure the CPU in the socket. When the CPU is installed, the lever should snap into place at the side of the socket

Press lever down
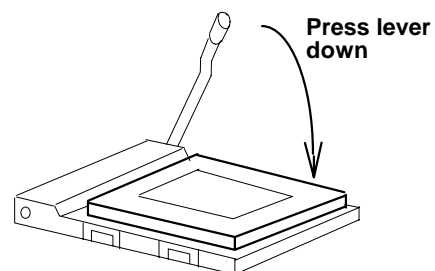
2.4 Upgrading System Memory

Upgrading System Memory, And Setting JP1.

The R558 mainboard can use up to two-168pin DIMM sockets(DIM 1, DIM 2) and four-72pin SIMM sockets (SIM 1, SIM 2, SIM 3, SIM 4). Upgradable from 4MB to 384MB.

* The DIMM Sockets and SIMM Sockets can not used at a same time, except when you used the +5V EDO or FP DIMM Module.

2.4.1 Installing a SIMM Module

A.

Insert the SIMM into the socket at an angle.

B.

Press it forward onto the positioning pins.

C.

The retaining clips should fit over the edge and hold the SIMM in place.
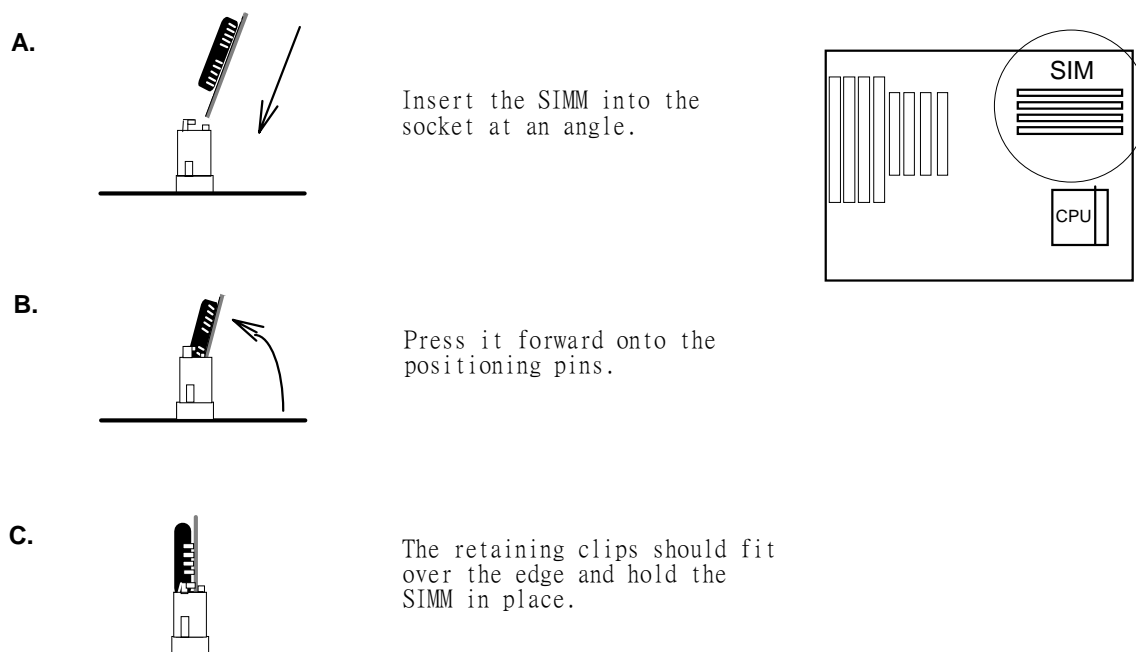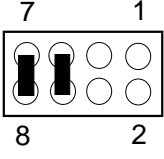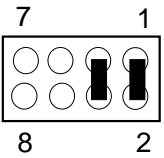
2.4.2. Installing a DIMM Module

A. Insert the DIMM module into the socket at an angle.

B. Put out the DIMM module from the DIMM socket.

Press down   **Press down**
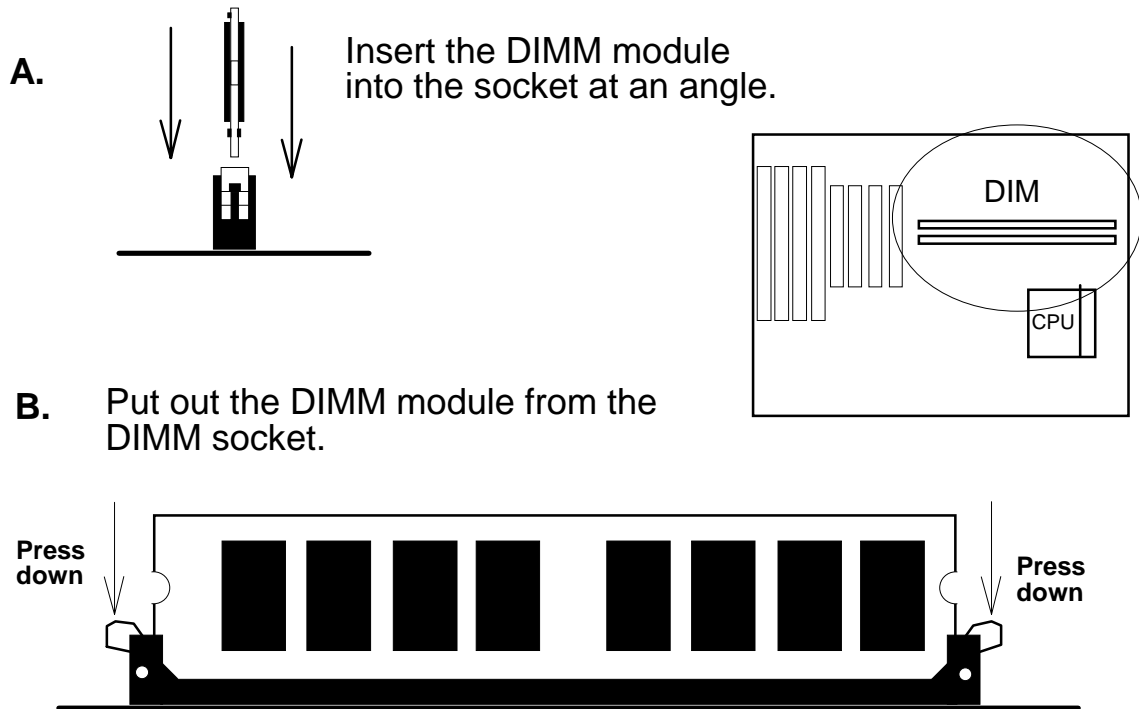
2.4.3. DIMM Voltage Select : JP1.

The DIMM socket voltage must be set correctly to either 3.3v or 5v, depending on the voltage of the DRAM DIMM Module or SDRAM DIMM Module used. All SDRAM DIMM Modules are 3.3v and all Fast Page Mode (FPM) DIMM Modules are 5v. Extended Data Mode (EDO) DIMM Modules come in both 3.3v and 5v, so when using both FPM DIMM Module and EDO DIMM Module in the system, only 5v EDO DIMM Module can be used.

DIMM Type	JP1 Setting
3.3v DIMM	7　　1 〔▮▮○○〕 8　　2
5v DIMM	7　　1 〔○○▮▮〕 8　　2

JP1

CPU
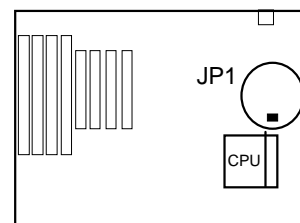
2.4.4. Memory Module Installing Table

A. For EDO and FPM SIMM or DIMM Module.

The DIMM sockets (DIM 1, DIM 2) can be used either :

Mode 1: +5V FPM(Fast Page Mode) or +5V EDO (Extended Data Mode) SIMM Module or DIMM Module. (FPM and EDO SIMM Module or DIMM Module can be used concurrently.)

Bank 1 SIM 1 & SIM 2	Bank 1 DIM 1	Bank 2 DIM 2	Bank 3 SIM 3 & SIM 4	JP1 Setting
4MB or 8MB or 16MB or 32MB	X	X	X	
4MB or 8MB or 16MB or 32MB	X	8MB or 16MB or 32MB	X	
4MB or 8MB or 16MB or 32MB	X	X	4MB or 8MB or 16MB or 32MB	
4MB or 8MB or 16MB or 32MB	X	8MB or 16MB or 32MB	4MB or 8MB or 16MB or 32MB	7 ○○██ 1 8 ○○██ 2
X	8MB or 16MB or 32MB	X	X	
X	8MB or 16MB or 32MB	8MB or 16MB or 32MB	X	
X	8MB or 16MB or 32MB	X	4MB or 8MB or 16MB or 32MB	
X	8MB or 16MB or 32MB	8MB or 16MB or 32MB	4MB or 8MB or 16MB or 32MB	

*If you want to use the on board VGA, the Bank 1 you must populated.

Mode 2: +3.3V EDO (Extended Data Mode) DIMM Module.

Bank 1 SIM 1 & SIM 2	Bank 1 DIM 1	Bank 2 DIM 2	Bank 3 SIM 3 & SIM 4	JP1 Setting
X	8MB / 16MB / 32MB / 64MB	X	X	
X	8MB / 16MB / 32MB / 64MB	8MB / 16MB / 32MB / 64MB	X	7 ██○○ 1 8 ██○○ 2
X	8MB / 16MB / 32MB / 64MB	X	X	
X	8MB / 16MB / 32MB / 64MB	8MB / 16MB / 32MB / 64MB	X	

*If you want to use the on board VGA, the Bank 1 you must populated.

B. For SDRAM DIMM Module.

If Synchronous DRAM Mode(SDRAM) DIMM Module is used, however, only SDRAM DIMM Module can be used in any of DIMM sockets (DIM 1, DIM 2).

Mode 3: +3.3V SDRAM DIMM Module.

Bank 1 SIM 1 & SIM 2	Bank 1 DIM 1	Bank 2 DIM 2	Bank 3 SIM 3 & SIM 4	JP1 Setting
X	8MB / 16MB / 32MB / 64MB	X	X	
X	8MB / 16MB / 32MB / 64MB	8MB / 16MB / 32MB / 64MB	X	
X	8MB / 16MB / 32MB / 64MB	X	X	
X	8MB / 16MB / 32MB / 64MB	8MB / 16MB / 32MB / 64MB	X	
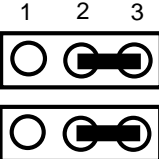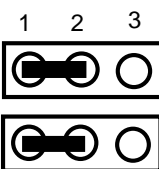
2.5 CMOS Clear Jumper: *JP18*

Clear the CMOS memory by momentarily shorting the Jumper 2-3 pin, then Open the Jumper to retain new setting. (Normal Operation is 1-2 Close)

Function	JP18 Setting	
(a) Normal	3 2 1 (Default)	
(b) Clear CMOS	3 2 1	
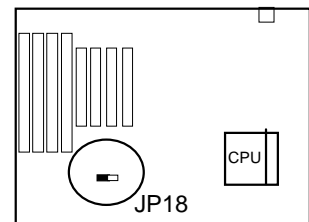
2.6 Flash EPROM Selector : *JP16 , JP17.* (Factory setting only)
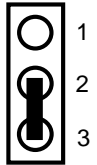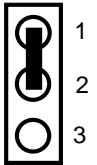
Flash ROM Type	Jumper Setting
(a) 1M/12V Flash ROM	1 2 3 ⬤ ⬤–⬤ JP16 ⬤ ⬤–⬤ JP17
(b) 1M/5V Flash ROM	1 2 3 ⬤–⬤ ⬤ JP16 ⬤–⬤ ⬤ JP17

JP16
JP17
CPU
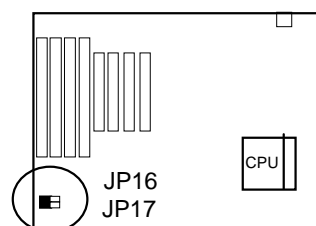
How to Update BIOS (Flash ROM)

1. Copy the Flash Utility to a bootable diskette.
   AWDFLASH.EXE : for AWARD BIOS.
   AMIFLASH.COM : for AMI BIOS.

2. Copy the new BIOS file to the diskette.
   ∗.BIN : is AWARD BIOS.
   ∗.ROM : is AMI BIOS.

3. Turn the system power off and make sure that the JP16 & JP17 are set to 1M/5V Flash.

4. Turn the system on, Boot from drive A: and run the Flash utility.

5. Follow the prompt and input the file name.

6. Save the old BIOS and when prompt to program hit " Y ".

7. After the BIOS is Flash, turn off the system and clear the CMOS.

8. Set the COMS Jumper (JP18) to default and power on.

【2】 _____

2.7 On Board VGA optional: *JP24, VGA Connector.*

VGA Option	JP24 Setting
Enable on board VGA. VGA cable plug into VGA Connector.	○ 1 ◎ 2 ◎ 3
Disable on board VGA. Use External VGA Card.	◎ 1 ◎ 2 ○ 3

VGA Connector

JP24

CPU
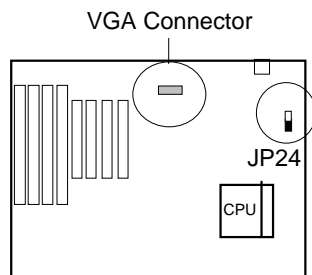
2.8 Connectors

The Connectors are made of the same component as the jumper switchs. There are connectors for the switchs and indicator lights from the system case. There are also connectors for the on-board I/O port and the leads from a system power supply.

【2】 _____

2.8.1.   I/O Ports .

COM.2 Printer Port PS/2 Mouse COM.1

IR-CON

K/B

USB.1 | | USB.2

FDC
IDE1
IDE2
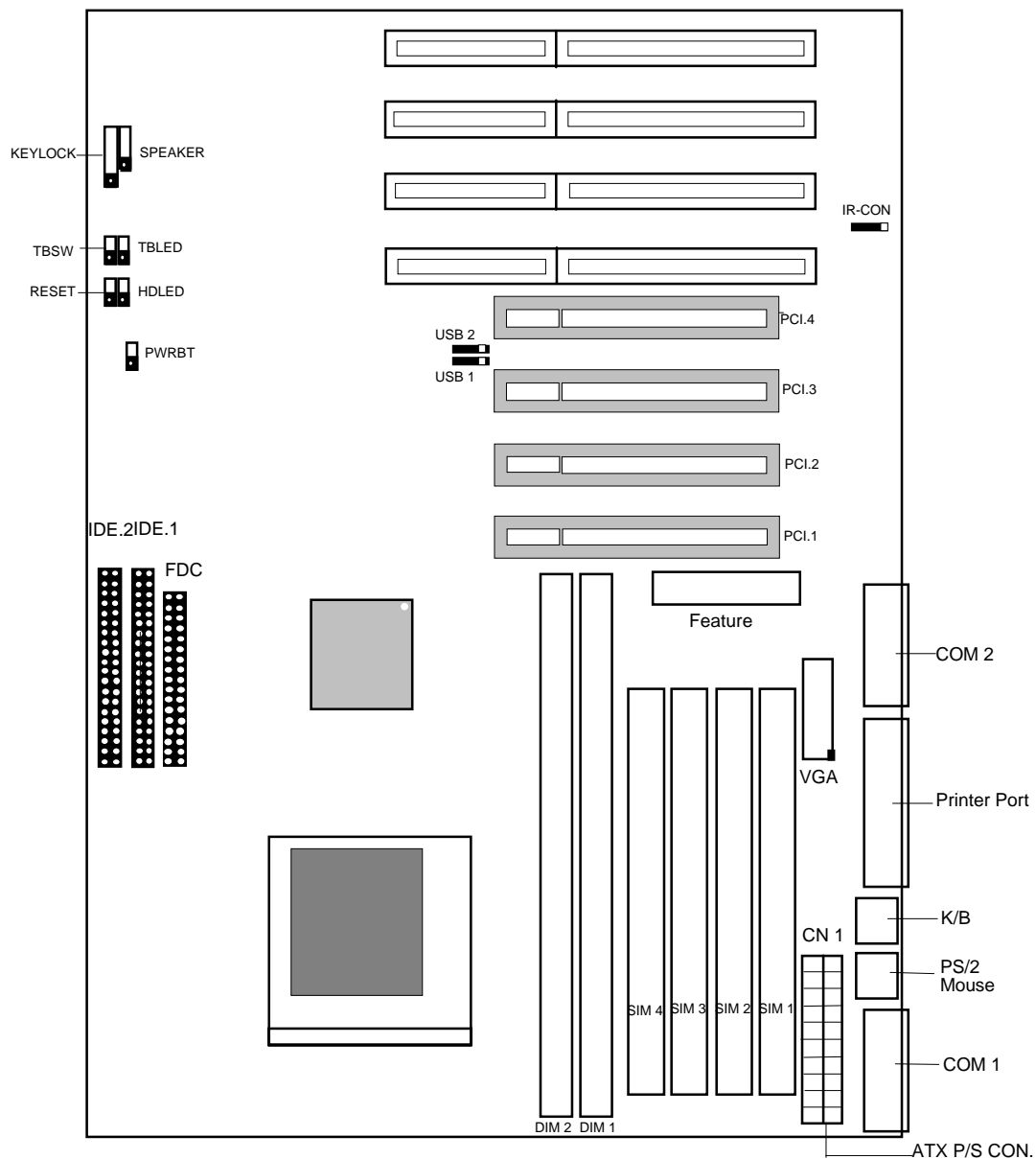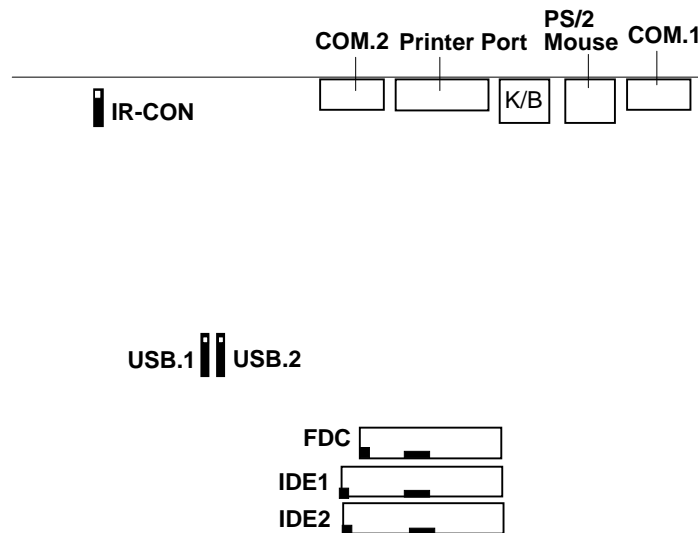
```
Pin 1 is upper left-hand
pin on each port connector
```

When you connect a ribbon cable to any of these I/O connectors, you must orient the cable connector so that the Pin 1 edge of the cable is at the Pin 1 end of the on-board connector.

The pin 1 edge of the ribbon cable is colored to indentify it.

Port & Controller Cables

The mainboard comes with the following cables:

＊ 1 IDE ribbon connector cables.

＊ 1 floppy disk drive ribbon connector cable.

＊ 1 VGA ribbon Cable with mounting bracket.

Port & Controller Cables

(1) Floppy Drive ribbon cable

(3) VGA ribbon cable
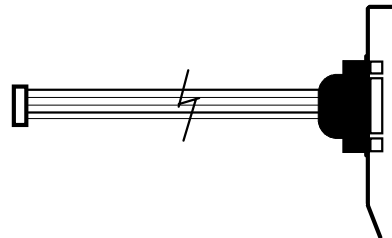
(2) IDE ribbon cable
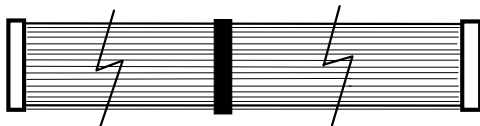
2.8.2. External Connections

Connectors are used to link the system board with other parts of the system, including the keyboard, the power supply, and the various controllers on the front panel of the system case. When connecting connect-wires to the connectors, you should remember that some of them must be aligned in a specific way in order to have proper functions.

☐ **Keyboard Lock Header** (KEYLOCK)

Connector for both a case-mounted lock and a Power-On LED.

Pin	Function
1	+ 5v DC
2	No Connect
3	Ground
4	Keylock
5	Ground

Pins 1–3: Power ON LED

IR-CON

TBLED

HDLED

SPEAKER

CPU

KEYLOCK   TBSW   RESET   P

5   1

KEYLOCK
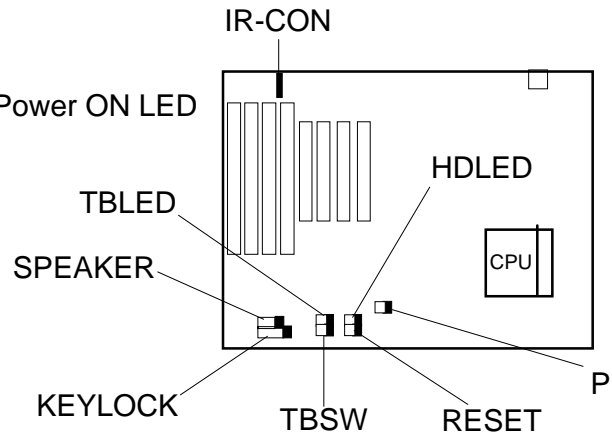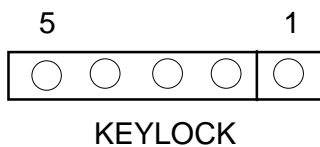
☐ **Speaker Header** (SPEAKER)

Connector for the lead from a speaker mounted inside the system case.

Pin	Function
1	Data
2	Ground
3	Ground
4	+5v DC

4   1

SPEAKER
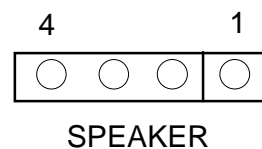
☐ **Turbo Switch Header** (TBSW)

Connector for the lead from a Turbo switch mounten on the System case.

TBSW	Function
Open	Turbo Mode
Close	De- Turbo Mode

2   1

TBSW

_____

_____
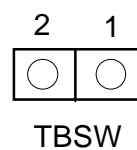
☐ **Turbo activity LED Header** (TB LED)

Connector for Turbo activity LED.

Pin	Function
1	LED anode (+)
2	LED cathode (-)

2   1
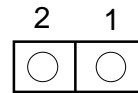
TB LED

☐ **Reset Switch Header**

Connector for the lead from a Reset switch mounted on the system case.

☐ **IDE Activity LED Header** (HD LED)

Connector for IDE activity LED.

Pin	Function
1	LED anode (+)
2	LED cathode (-)

2   1
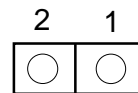
HD LED

☐ **Infrared Connector** (IR-CON)

If you set the BIOS's item "IR Function" to "HP SIR" or "ASK IR", the COM2 port will be switched to support IR function.

Pin	Function
1	+ 5v DC
2	Fir-con
3	Ir - Rx
4	Ground
5	Ir - Tx

1
5

_____
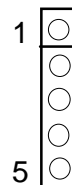
【2】 _____

□ **USB (Universal Serial Bus) Connector** (USB1, USB2)

USB is an open industry standard, providing a simple and inexpensive way to connect up to 125 devices to a single computer port. Keyboards, Mouse tablets, digitizers, scanners, bar-code readers, modems, printers and many more can all run at the same time. USB is a dynamically reconfigurable serial bus with an elementary data rate of 12Mbps, based on off the shelf, low cost micro-controller technology. Its modular layered software protocol supports sophisticated devices and application programs. This board contains a USB Host controller and includes the root hub with two USB ports (meet USB Rev 1.0 spec.), which permits the connection of two USB peripherals or hub devices directly.

Pin Function	USB 1			USB 2	Pin Function
SBV0	1	1	1	1	SBV1
-SBD0	2			2	-SBD1
+SBD0	3			3	+SBD1
SBG0	4			4	SBG1
Ground	5			5	Ground
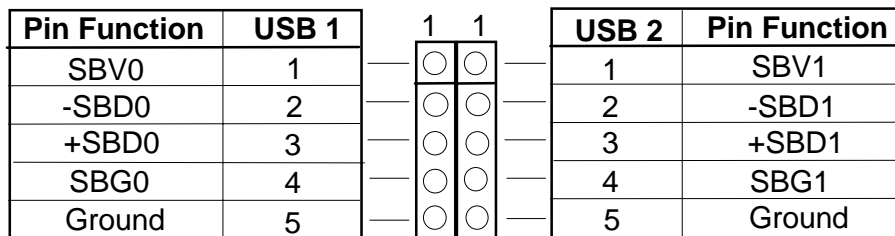
⚠ Now under testing of compatibility with different peripherals.

□ **ATX (CN 1) Power Supply Connector:**
   The main board requires a power supply with 200W at least. While installing the board, the power supply connector is usually the last one to be connected. Before connected to power supply, make sure it is not connected to power source.
   Most ATX power supplies have one set of 20-wire connectors. Plug the ATX connectors onto the board connector.

 For ATX Power Supply : (Please see the Appendix)

```
          CN1                          Keyboard      Mouse
  +12V  10  ■ ■  20  +5V
STB +5V   9  ■ ■  19  +5V                              CN1
Power GOOD 8  ■ ■  18  -5V                             (ATX
 Ground   7  ■ ■  17  Ground      USB. 2
   +5V    6  ■ ■  16  Ground
 Ground   5  ■ ■  15  Ground
   +5V    4  ■ ■  14  Power ON Switch            CPU
 Ground   3  ■ ■  13  Ground        USB. 1
  N.C.    2  ■ ■  12  -12V
  N.C.    1  ■ ■  11  N.C.
                                  PWRBT
```
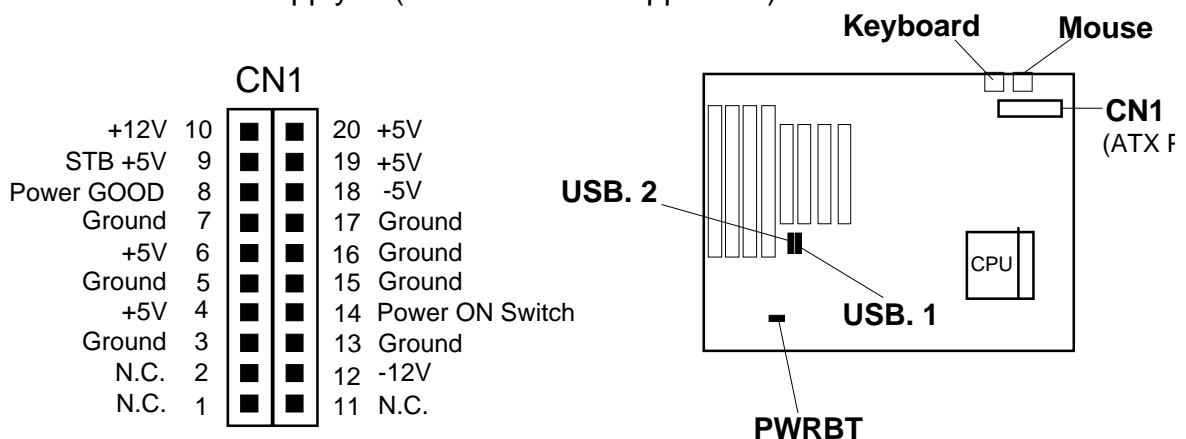
After the ATX Power was plug into CN1 & System was assemble O.K. Then you can used the Power Botton (PWRBT). To turn ON/OFF the system power.

3. Award BIOS Setup Program

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in CMOS RAM so that it can retain the Setup information when the power is turned off.

When you turn on (or reboot) the system, press the Delete key to enter the Award BIOS setup screen as following:

ROM PCI / ISA BIOS
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 SETUP DEFAULTS	EXIT WITHOUT SAVING

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

Time, Date, Hard Disk Type...

Initial Setup Program Screen

【3】

3-1 Standard CMOS Setup

Choose the **Standard CMOS Setup** option from the **CMOS Setup Utility** menu shown below to display the following screen. The Standard CMOS Setup allows users to configure system components such as date, time, hard disk drive, floppy disk drive, display and memory. When a field is highlighted, on-line help information is displayed on the left bottom edge of the screen.

```
                         ROM PCI / ISA BIOS
                       STANDARD CMOS SETUP
                       AWARD SOFTWARE, INC.


Date(mm:dd:yy)   : Tue, Jun 10 1997
Time (hh:mm:ss)  : 9:14:43

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
                                          Base Memory :    640K
Drive  B       : None               Extended Memory : 15360K

Video          : EGA/VGA               Other Memory :    384K
Halt On        : ALL Errors         - - - - - - - - - - - - - - - - - - - - - - - -

                                      Total Memory  : 16384K

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

Standard CMOS Setup Screen

Primary/Secondary;Master/Slave Types

This category identifies the types of hard disks that have been installed in the computer. There are 45 predefined types and 4 user defineable types for Enhance IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-defineable. 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 category. If your hard disk drive type is not matched or listed, you can use "User" to define your own drive type manually.

If you select **User**, you will need to know the information listed below. Enter the information directly from the keyboard and press <Enter>. This information should be included in the documentation of your hard disk vender or the system manufacturer.

TYPE	drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	mode type

If you select type **Auto**, BIOS will Auto-Detect the HDD & CD-ROM drives at the POST stage and show the IDE for HDD & CD-ROM drives.
If the controller of HDD interface is **ESDI**, the selection shall be **Type 1**.
If the controller of HDD interface is **SCSI**, the selection shall be **None**.
If a hard disk has not been installed, select **None** and press Enter.

* **Write Pre compensation -** The size of a sector gets progressively smaller as the track diameter diminishes, but each sector must still hold 512 bytes. Write Pre compensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for sectors on inner track.

* **Landing Zone -** The cylinder location where the heads will normally park when the system is shut down.

* **Capacitor** = (Number of heads) x (Number of cylinders) x (Number of sectors per track) x (512 Bytes per sector)

* **Mode**
  For IDE hard drives, the BIOS provides three modes to support both normal IDE hard disks and drives larger than 528MB:

  Auto mode (default) - detect and enter the IDE device type during bootup.
  Normal mode - for IDE drives smaller than 528MB.

  LBA mode - provides LBA (Large Block Addressing) function for mass capacity hard disk that larger than 528MB and up to 8.4GB (Giga Bytes).

  Large mode - some mass capacity hard disks operate in large mode and do not support LBA function for above mentioned mass capacity hard disks. Large mode is a new specification which may not be fully supported by all operation systems (MS-DOS does support it now, but is uncommon)

【3】

3-2 BIOS Features Setup

By choosing the **BIOS FEATURES SETUP** option from the **CMOS SETUP UTILITY** menu, the screen below is displayed. This sample screen contains the manufacturer default values for the mainboard.

```
                        ROM PCI / ISA BIOS
                        BIOS FEATURES SETUP
                        AWARD SOFTWARE, INC.

Virus Warning              :Disabled    Video  BIOS  Shadow  :Enabled
CPU Internal Cache         :Enabled     C8000 - CBFFF Shadow :Disabled
External Cache             :Enabled     CC000 - CFFFF Shadow :Disabled
Quick Power On Self Test   :Enabled     D0000 - D3FFF Shadow :Disabled
Boot Sequence              :C,A,SCSI    D4000 - D7FFF Shadow :Disabled
Swap Floppy Drive          :Disabled    D8000 - DBFFF Shadow :Disabled
Boot Up Floppy Seek        :Enabled     DC000 - DFFFF Shadow :Disabled
Boot Up Numblock Status    :On
Boot Up System Speed       :High
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
                                        F5   : Old Values    (Shift) F2 : Color
                                        F7   : Load Setup Defaults
```

BIOS Features Setup Screen

A. VIRUS PROTECTION

Virus Warning
After Enabled, BIOS activates a warning message to the user when any program attempts to access the boot sector or hard disk partition table and allows the user to intervene.

B. CACHE CONTROL

CPU Internal Cache/External Cache
These fields allow you to enable or disable the CPUs "Level 1" built - in cache and "Level 2" secondary cache.

C. BOOT UP FEATURES

After power on the system, BIOS will perform a series of device initializations and diagnostic tests.

Quick Power On Self Test (POST)
If this is set to Enabled, BIOS will skip some check items during the Power On Self Test (POST).

Boot Sequence
This option sets the sequence of boot drives (either floppy drive A: or hard disk drive C:) that BIOS attempts to boot from after POST completes.

∗ CD-ROM drives are becoming a standard device on computer systems. They have a large storage capacity and can store different operating systems with which the system can boot up from. A CD-ROM boot-up function is provided with this mainboard and the user is able to select from booting options A:, C:, or the CD-ROM. Regardless of whether using an IDE or SCSI CD-ROM, the system will look for the operating system on the first available bootable device.

Swap Floppy Drive
Enabled - The system will swap the floppy drive assignment so that drive A will function as drive B, and drive B will function as drive A.

Boot Up Floppy Seek
During POST, BIOS will determine if the floppy installed disk drive has 40 or 80 tracks. (360K drive has 40 tracks and 720K, 1.2M and 1.44M have 80 tracks).

Boot Up NumLock Status
Defines the keyboard as number keys or arrow keys.

Boot Up System Speed
This option can be used to select CPU speed at system boot.

D. KEYBOARD INTERFACE

Typematic Rate Setting
When enabled, you can set the following two typematic controls items.

Typematic Rate (Chars/Sec)
The typematic rate sets the rate at which characters on the screen repeat when a key is pressed and held down.

Typematic Delay (Msec)
Sets how long after you press a key that a character begins repeating.

【3】

E. Security Option

System: When entering a wrong password, the system will not boot and will de
any access to the BIOS Setup.

Setup: When entering a wrong password, the system can boot, but will not
allow access to the BIOS Setup.

F. PCI/VGA Palette Snoop

A system may have two display devices present: a VGA-compatible interface
and another graphics controller. In this case, both devices implement the color
palette registers at the same I/O addresses. The configuration software must
program one of the devices to actively act as the target, while the other device
is programmed to quietly "snarf" the write data from the bus as the data flies by
on it's way to the target.

  ∗ Some non-standard VGA cards or MPEG video cards may not show
     colors properly. Setting this function at **Enabled** can correct this problem.

G. OS Select (For DRAM > 64MB)
 If your system DRAM is larger than 64MB and you are running OS/2, please
select **"OS/2"** as the item value. Otherwise, set the item value to **"Non-OS/2."**

H. Shadow Memory
BIOS can copy adapter ROM from address C0000h through DFFFFh to RAM
for faster execution. Shadow setting is chipset specific and dependent on
system hardware.

3-3 Chipset Features Setup

By choosing the **CHIPSET FEATURES SETUP** option from the **CMOS SETUP
UTILITY** menu,the screen below is displayed. This sample screen contains the
manufacturer's default values for the mainboard.

A. Auto Configuration: Enabled (default)

If Auto Configuration is enabled, BIOS can autodetect the DRAM module type
EDO or FP) and set the optional timings for items.

```
┌─────────────────────────────────────────────────────────────────────┐
│                        ROM PCI / ISA BIOS                             │
│                     CHIPSET FEATURES SETUP                            │
│                      AWARD SOFTWARE, INC                              │
├───────────────────────────────────┬───────────────────────────────────┤
│  AUTO Configuration    :Enabled    │  CPU to PCI Burst Mem. WR  :Disable │
│                                    │  ISA Bus Clock Frequency   :PCICLK/4 │
│  L2 (WB) Tag Bit Length :8bits     │  System BIOS Cacheable     :Enabled │
│  SRAM Back-to-Back     :Enabled    │  Video BIOS Cacheable      :Enabled │
│  Starting Point of Paging :1T      │  Memory Hole at 15M-16M    :Disabled │
│  Refresh Cycle Time (us)  :15.6    │  VGA Shared Memory Size    :1 MB    │
│  RAS Pulse Width Refresh  :6T      │  VGA Memory Clock (MHz)    :55      │
│  RAS Precharge Time    :4T         │  Linear Mode SRAM Support  :Disabled │
│  RAS to CAS Delay      :4T         │                                    │
│  CAS# Pulse Width (FP)  :2T        │                                    │
│  CAS# Pulse Width (EDO)  :1T       │                                    │
│  CAS  Precharge Time (FP)  :1T/2T  │                                    │
│  CAS  Precharge Time (EDO) :1T/2T  │                                    │
│  SDRAM WR Retire Rate   :X-2-2-2   ├───────────────────────────────────┤
│  SDRAM Wait State Control :1WS     │  ESC  : Quit      ↑↓→←    : Select Item │
│  Read Prefetch Memory RD :Enabled  │  F1   : Help      PU/PD/+/- : Modify │
│  CPU to PCI Post Write  :4T        │  F5   : Old Values  (Shift) F2  : Color │
│                                    │  F7   : Load Setup Defaults         │
└───────────────────────────────────┴───────────────────────────────────┘
```

Chipset Features Setup Screen

※ **All of the above entries on the screen are standard settings for this mainboard and should not be changed unless you are absolutely sure of what you are doing.**

B. ISA Bus Clock Frequency

The PCI clock speed is the CPU bus speed divided in half. The ISA bus speed is derived from the PCI clock speed and has a maximum bandwidth of 8MHz. Select the value that results in the closest number to 8 when dividing the PCI clock by 3 or 4. If you are using a frequency higher than 66 MHz bus speed use the 7.159MHz option.

C. System/Video BIOS Cacheable

This function allows BIOS values to be temporarily placed into the system's cache memory. System performance slightly increases when these functions are enabled.

D. Memory Hole at 15M-16M

Enabling this feature will reserve the 15MB to 16MB memory address space for ISA expansion cards. However, enabling this function will result in not allowing the system to have access to memory above 16MB. Please note that some expansion cards require this setting to be enabled. The default setting is Disable

F. Linear Mode SRAM Support

When use the Cyrix CPU or IBM CPU; System support Linear mode.

3- 4 Power Management Setup

This section provides information on the Green PC power management features. In order to enable the power management function, please select **POWER MANAGEMENT SETUP** option from the **CMOS SETUP UTILITY** menu.

```
                    ROM PCI / ISA BIOS
                  POWER MANAGEMENT SETUP
                   AWARD SOFTWARE, INC
```

Power Management	:Disable	VGA Activity	:Disabled
PM Control by APM	:Yes	IRQ3 (COM 2)	:Enabled
Video Off Option	:Susp, Stby-> Off	IRQ4 (COM 1)	:Enabled
Video Off Method	:V/H SYNC + Blank	IRQ5 (LPT 2)	:Enabled
Switch Function	:Deturbo	IRQ6 (Floppy Disk)	:Enabled
MODEM Use IRQ	: 3	IRQ7 (LPT 1)	:Enabled
		IRQ8 (RTC Alarm)	:Disabled
		IRQ9 (IRQ2 Redir)	:Enabled
** PM Timers **		IRQ10 (Reserved)	:Enabled
HDD Off After	:Disable	IRQ11 (Reserved)	:Enabled
Doze Mode	:Disable	IRQ12 (PS/2 Mouse)	:Enabled
Standby Mode	:Disable	IRQ13 (Coprocessor)	:Enabled
Suspend Mode	:Disable	IRQ14 (Hard Disk)	:Enabled
		IRQ15 (Reserved)	:Enabled
** PM Events **		ESC : Quit ↑↓→← : Select Item	
COM Ports Activity	:Enabled	F1 : Help PU/PD/+/- : Modify	
LPT Ports Activity	:Enabled	F5 : Old Values (Shift) F2 : Color	
HDD Ports Activity	:Enabled	F7 : Load Setup Defaults	

Power Management Setup Screen

A. Selecting Power Management (PM) Modes:

Power Management (Doze, Standby, and Suspend modes)
 User Define - User can configure her/his own PM functions.
 Disabled - Disables the power management functions. (Default setting)
 For Minimum. Saving - All timers use the following value --
 Doze - 40min, Standby - 40min, Suspend - 40min.
 For Max. Saving - all timers use the following value--
 Doze - 20sec, Standby - 20sec, Suspend - 20sec.

PM Control by APM
This mainboard supports the Intel and Microsoft INT 15h APM BIOS function which creates an interface to allow the OS to communicate with the SMM code.
If APM is not installed, this option has no effect.

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＊ APM (Advanced Power Management) should be installed to keep the time updated when the computer enters suspend mode activated by the BIOS Power Management. For DOS environment, you need to add DEVICE = C:\DOS\POWER.EXE. For Windows 3.1 x and Windows 95, you need to install Windows with the APM feature.

Video Off Option
This item determines the power management modes the monitor will enter before entering the Off-state as defined by the Video Off Method below. The Video Off Option moves from low (doze) to medium (standby) to high (suspend) power saving modes.

Video Off Method
This is the highest power saving mode and is defined by the following otions. V/H SYNC + Blank mode saves more power than Blank mode.

Blank - BIOS will blank the screen when disabling video.

V/H SYNC + Blank - BIOS will blank the screen and turn off V/H SYNC signals from VGA card to the monitor. If a Green monitor detects that the V/H-SYNC signals have been turned off, the electron gun will be cut to save power.

DPMS Supported - Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard. Use software supplied by your video subsytem to set video power management options.

B. Switch Function
This option determins the TURBO SW(TBSW), are functional -Deturbo or Brea or Break or Break/ wake.

Deturbo: Set the "TBWS" is a Turbo or Deturbo switch.
Break or Break/wake: Set the "TBSW" is a suppend switch.

C. Modem Use IRQ
While modem rings up, that will wake up the system from green mode. You must connect the Modem to COM2 (default INT=3) and turn on the resume event in green mode.

E. PM Time Setting

HDD Off After
Select times between 15 and 1 minutes to power manage the HDD. The hard disk drive will enter sleep mode where no power is supplied to the hard drive. Any read /write activity to the hard drive will bring it back to full-on state. This function is only valid for IDE HDDs that support the power saving function.

Doze Mode
Enabling this function allows the system to enter Doze mode if no activity occured during specified expiration time.

Standby Mode
Enabling this function allows the system to enter Standby mode if no activity occured during specified Doze mode time. The CPU speed of Standby mode is CPU clock/8MHz.

＊ The CPUCLK (external CPU clock) refers to the system clock mentioned in this manual.

Suspend Mode
Enabling this function allows the system to enter Suspend mode if no activity occured during specified Standby mode time. The CPU speed of Suspend mode is 0 MHz.

＊ In Standby or Suspend mode, the system may also turn off the video signal and power down the hard disk driver (depending on HDD Power Down setting).

D. PM Events Mask Control

Individual IRQ wake up Event:

If a device generates an interrupt request, the system will wake up to normal mode.

Power Down Activities:

If any event happens when the system is running at Suspend mode the system will return to normal mode.
If any event happens When the system is running at Doze or Standby mode the timer will start recounting from zero.

3-5 PNP/PCI Configuration

```
                     ROM PCI / ISA BIOS
                   PNP/PCI CONFIGURATION
                    AWARD SOFTWARE, INC.

Resources Controlled By        :Manual    PCI IRQ Actived By      : Level
Reset Configuration Data       :Disabled  PCI IDE 2nd Channel     : Enabled
                                          PCI IDE IRQ Map To      : ISA
IRQ-3 assigned to     : Legacy ISA
IRQ-4 assigned to     : Legacy ISA
IRQ-5 assigned to     : PCI/ISA PnP
IRQ-7 assigned to     : Legacy ISA
IRQ-9 assigned to     : PCI/ISA PnP
IRQ-10 assigned to    : PCI/ISA PnP
IRQ-11 assigned to    : PCI/ISA PnP
IRQ-12 assigned to    : PCI/ISA PnP
IRQ-14 assigned to    : Legacy ISA
IRQ-15 assigned to    : Legacy ISA
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   F7   : Load Setup Defaults
DMA-7 assigned to     : PCI/ISA PnP
```

PCI & ONBOARD I/O Setup Screen

A. Resource Controled By

Manual :   The system BIOS will not refer to the ESCD for IRQ & DMA
           information. Instead, it will refer to the items in the setup menu for
           assigning IRQ & DMA.

Auto :   The system BIOS will refer to the ESCD for all legacy information.

∗ ESCD (Extended System Configuration Data) provides a detailed format of
  the configuration data structures stored in flash memory.   Each data
  structure defines the resources used by a device or a card in the system.
  This includes legacy and PCI/ISA PnP devices.

B. Reset Configuration Data

Enable: The system BIOS will clear/reset the ESCD during the POST.

> ※ After clearing the ESCD, the BIOS will then change this item's value to "Disabled" , otherwise, the ESCD data would become useless.

C. IRQ#/DMA# assign to

When resources are controlled manually, you can assign each system interrupt & DMA channel for "Legacy ISA" or "PCI/ISA PnP" card used.

> ※ While using **Legacy ISA Card** (non-PnP ISA card), please set its necessary corresponding resources (INT#, DMA#) from "PCI/ISA PnP" to "Legacy ISA"

> * All ISA non-PnP devices are legacy devices that select resources (I/O Addr. INT# or DMA#) by using hardware jumpers.

> * IRQ-3/4/7/14/15 have been set as default for on board devices (COM2, COM1, Printer port, IDE1 AND IDE2).

D. PCI Slot IDE 2nd Channel

If you designate a higher performance IDE board into the physical PCI slot you must disable On-chip IDE controller. This item allows you to turn on the 2nd channel of this external board.

E. PCI IDE IRQ Map to

This function allows user to select PC AT (ISA) interrupts or PCI IDE IRQ mapping. ISA: BIOS does not designate any IRQ signal to the PCI slot. This is the default setting.
PCI-SLOT 1-3: User can designate which PCI slot (1-3) the IDE card is inserted into. This setting is suitable for use with older PCI IDE cards that BIOS is not able to recognize.
PCI-AUTO: BIOS automatically detects which PCI slot the PCI IDE card is inserted into.

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3-6 Load Setup Defaults

"LOAD SETUP DEFAULTS" loads the default system values directly from **"CMOS SETUP UTILITY"** menu(Figure 3-1). If the stored record created by the setup program becomes corrupted (and therefore unusable), these defaults will be loaded automatically when you turn on the computer.

```
                        ROM PCI / ISA BIOS
                        CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.
───────────────────────────────────────────────────────────────────

STANDARD CMOS SETUP              INTEGRATED PERIPHERALS

BIOS FEATURES SETUP             SUPERVISOR PASSWORD

CHIPSET FEA ┌─────────────────────────────────────────┐
            │     Load SETUP Defaults <Y/N>? N        │
POWER MAN   │                                         │
            └─────────────────────────────────────────┘
PNP/PCI CONFIGURATION            SAVE & EXIT SETUP

LOAD SETUP DEFAULTS             EXIT WITHOUT SAVING
───────────────────────────────────────────────────────────────────
ESC      : Quit                 ↑↓→←      : Select Item
F10      : Save & Exit Setup     (Shift) F2    : Change Color
───────────────────────────────────────────────────────────────────
        Load SETUP Defaults except Standard CMOS SETUP
```
Load Setup Defaults Screen

3-7 Integrated Peripherals

A. On Board IDE Control
Internal PCI/IDE
To use the internal PCI IDE controller, set this to Primary (IDE 1), Secondary (IDE 2), or Both. If you want to use your own external PCI IDE external controller card disable the IDE port(s) you are using with the Disable command.

IDE Primary/Secondary;Master/Slave;PIO/UltraDMA
The eight IDE PIO/UltraDMA fields let you set PIO mode (0-4) or UltraDMA mode (Enabled/ Disabled) for each IDE device that the internal PCI IDE interface supports. Modes 0 through 4 provide successively increased PIO performance. In Auto mode, the system automatically determines the best mode for each device.

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3-14

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```
┌─────────────────────────────────────────────────────────────────────────────┐
│                          ROM PCI / ISA BIOS                                   │
│                       INTEGRATED PERIPHERALS                                  │
│                        AWARD SOFTWARE, INC.                                   │
├─────────────────────────────────────────┬───────────────────────────────────┤
│ Internal PCI/IDE          : Both         │ Onboard Parallel Mode      : SPP   │
│ IDE Primary Master PIO    : Auto         │                                    │
│ IDE Primary Slave PIO     : Auto         │                                    │
│ IDE Secondary Master PIO  : Auto         │                                    │
│ IDE Secondary Slave PIO   : Auto         │ PS/2 mouse function     : Enabled  │
│ Primary Master UltraDMA   : Auto         │ USB Controller          : Enabled  │
│ Primary Slave UltraDMA    : Auto         │ USB Keyboard Support     : Disabled │
│ Secondary Master UltraDMA : Auto         │                                    │
│ Secondary Slave UltraDMA  : Auto         │                                    │
│ IDE Burst Mode            : Disabled     │                                    │
│ IDE Data Port Post Write  : Enabled      │                                    │
│ IDE HDD Block Mode        : Enabled      │                                    │
│                                          │                                    │
│ Onboard FDD Controller    : Enbaled      │                                    │
│ Onboard Serial Port 1     : Auto         │                                    │
│ Onboard Serial Port 2     : Auto         ├───────────────────────────────────┤
│ UART 2 Mode               : Standard     │ ESC : Quit    ↑↓→←    : Select Item│
│                                          │ F1   : Help   PU/PD/+/- : Modify   │
│                                          │ F5   : Old Values (Shift) F2 : Color│
│ Onboard Parallel Port     : 378/IRQ7     │ F7   : Load Setup Defaults         │
└─────────────────────────────────────────┴───────────────────────────────────┘
```

PCI & ONBOARD I/O Setup Screen

IDE HDD Block Mode

This function maximizes the number of sectors that can be transferred to and from the hard disk drive at that time. The default setting is Enabled.

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3-8 Supervisor Password & User Password Setting

A. Set "User password" Only
If "Security Option" (located in BIOS features Setup Screen) is set to "System"

```
        ┌──────────────────────────────────────────┐
        │                                          │
        ▼                                          │
   ╱─────────────╲          No                     │
  ╱ User Password  ╲──────────────────────────────┘
  ╲  correct ?     ╱
   ╲─────────────╱
        │ Yes
        ▼
   ╱─────────────╲      Yes      ┌──────────────────┐
  ╱  BIOS Setup ?  ╲────────────▶│   BIOS Setting   │
  ╲               ╱              └──────────────────┘
   ╲─────────────╱
        │ No
        ▼
  ┌──────────────────┐
  │  System Booting  │
  └──────────────────┘
```
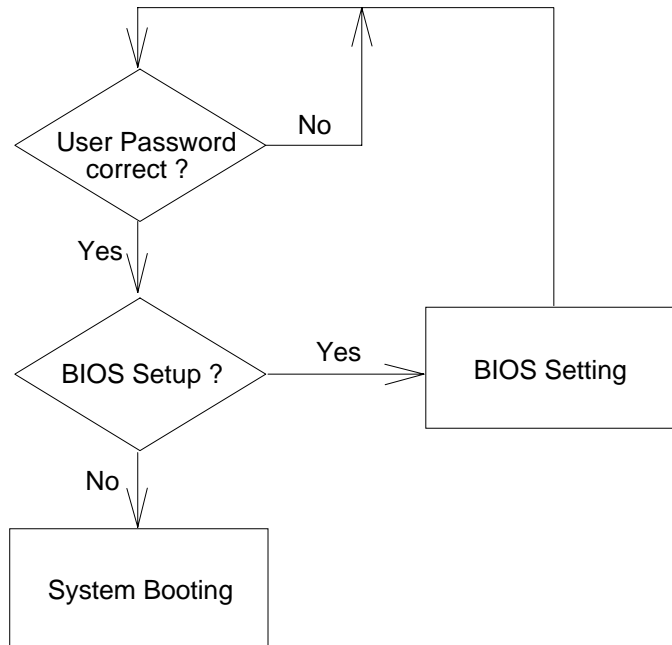
If "Security Optional" is set to "Setup"

```
        ┌──────────────────────────────────────────┐
        │                              No          │
        ▼                                          │
   ╱─────────────╲    Yes      ╱─────────────╲     │
  ╱  BIOS Setup ?  ╲──────────▶ User Password  ╲────┘
  ╲               ╱            ╲  correct ?    ╱
   ╲─────────────╱             ╲─────────────╱
        │                           │ Yes
        │ No                        ▼
        │                   ┌──────────────────┐
        ▼                   │   BIOS Setting   │
  ┌──────────────────┐      └──────────────────┘
  │  System Booting  │
  └──────────────────┘
```
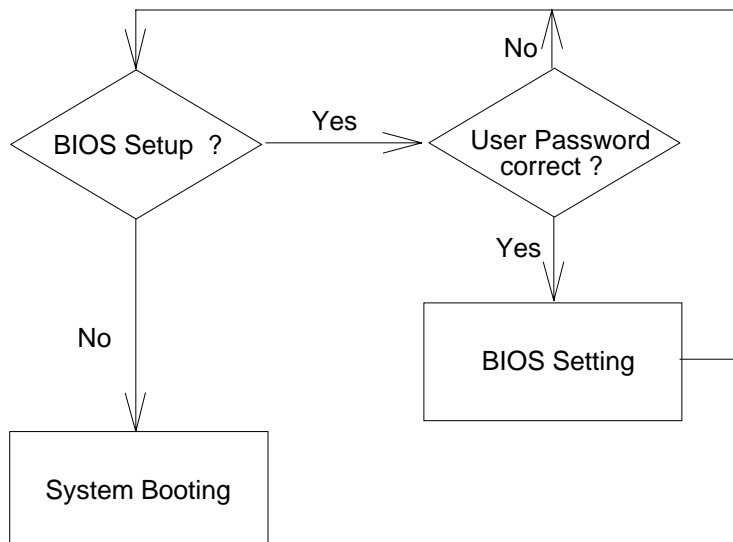
B. Set both "Supervisor password" and "User password"
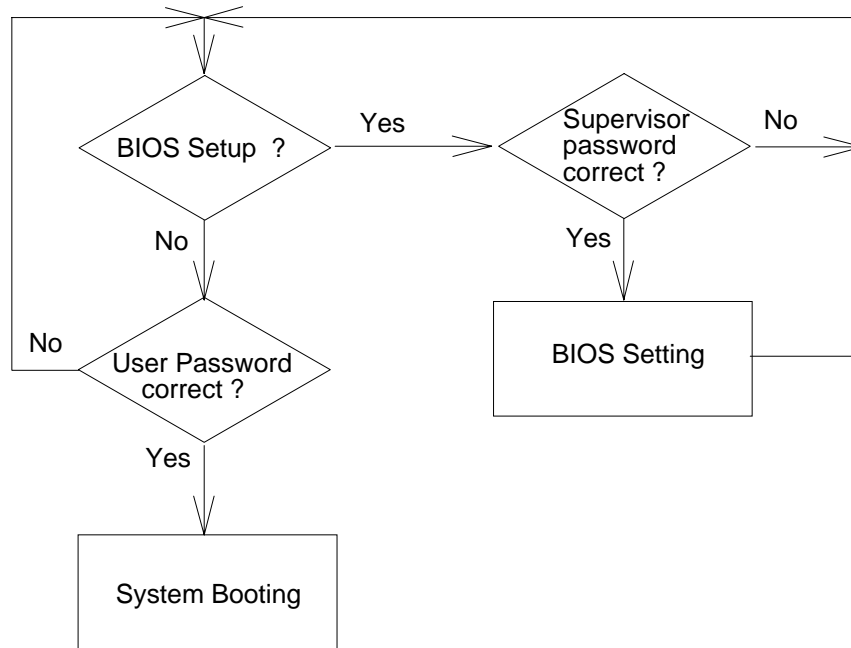
3-9 IDE HDD Auto Detection

This utility can AUTO DETECT IDE hard disk type.

ROM PCI / ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master :								

Select Primary Master Option (N=Skip):N

OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
2(Y)	547	530	32	0	1059	63	LBA
1	547	1060	16	65535	1059	63	NORMAL
3	547	530	32	65535	1059	63	LARGE

Note: Some OSes (like SCO-UNIX) must use "NORMAL" for installation
ESC: Skip

IDE HDD Auto Detection Screen

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3-17

【3】 _____

3-10 Save and Exit Setup

"SAVE & EXIT SETUP" If you select this and press the [Enter] key, the values entered in the setup utilities will be recorded in the CMOS memory of the chip set. The microprocessor will check this whenever you turn on your system, and compare this to what it finds as it checks the system. This record is required for the system operation.

3-11 Exit Without Saving

"EXIT WITHOUT SAVING" Selecting this option and pressing the [Enter] key let you exit the Setup program without recording any new values or changing old ones.

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4. Appendix ： About the ATX Power Supply.

(A) Software Power-Off

∗ This mainboard supports Software Power-Off. Be sure that the **Power Management** option in the Power Management Setup menu is not set to Disable to activate this function.

∗ How to use **"Software Power-Off Control"** function in Windows 95.
   1. Click the **START** button on the Windows 95 task bar.
   2. Select **Shut Down The Computer** and the system turns off. The message **It is now safe to turn off your computer** will not be shown when using this function.

(B) When you used the ATX Power Supply on the system, you will have special extra function:

1. Hot Key Power Off function : This function let you turn the system off used the key board.
                                 (CTRL+ALT+Backspace)

   Enable or Disable the Hot Key Power Off function:
   Step 1 : Turn on or reboot the system. After a series of diagnostic check, you are asked to press DEL to enter Setup.

   Step 2 : Press The <DEL> key to enter Award BIOS program and the main screen appears:

ROM PCI / ISA BIOS **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 SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑↓→← : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

CMOS Setup Utility Screen

_____

【4】 _____

Step 3 : Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of items appears:

```
┌─────────────────────────────────────────────────────────────────────────┐
│                          ROM PCI / ISA BIOS                               │
│                       POWER MANAGEMENT SETUP                              │
│                        AWARD SOFTWARE, INC                                │
├──────────────────────────────────────┬────────────────────────────────────┤
│ Power Management      : Disable       │ VGA Activity            : Disabled │
│ PM Control by APM     : Yes           │ IRQ3   (COM 2)          : Enabled  │
│ Video Off Option      : Susp, Stby-> Off │ IRQ4   (COM 1)       : Enabled  │
│ Video Off Method      : V/H SYNC + Blank │ IRQ5   (LPT 2)       : Enabled  │
│ Switch Function       : Deturbo       │ IRQ6   (Floppy Disk)    : Enabled  │
│ MODEM Use IRQ         : 3             │ IRQ7   (LPT 1)          : Enabled  │
│ Hot key Power Off     : Disabled      │ IRQ8   (RTC Alarm)      : Disabled │
│                                       │ IRQ9   (IRQ2 Redir)     : Enabled  │
│          ** PM Timers **              │ IRQ10  (Reserved)       : Enabled  │
│ HDD Off After         : Disable       │ IRQ11  (Reserved)       : Enabled  │
│ Doze Mode             : Disable       │ IRQ12  (PS/2 Mouse)     : Enabled  │
│ Standby Mode          : Disable       │ IRQ13  (Coprocessor)    : Enabled  │
│ Suspend Mode          : Disable       │ IRQ14  (Hard Disk)      : Enabled  │
│                                       │ IRQ15  (Reserved)       : Enabled  │
│                                       ├────────────────────────────────────┤
│          ** PM Events **              │ ESC  : Quit     ↑↓→←      : Select Item │
│ COM Ports Activity    : Enabled       │ F1   : Help     PU/PD/+/- : Modify  │
│ LPT Ports Activity    : Enabled       │ F5   : Old Values  (Shift) F2 : Color │
│ HDD Ports Activity    : Enabled       │ F7   : Load Setup Defaults          │
└──────────────────────────────────────┴────────────────────────────────────┘
```

Power Management Setup Screen

Step 4 : Choose the item "Switch Function", setted to "Break" or "Break/Wake".

Step 5 : Choose the item "Hot Key Power Off", setted to
  Enabled : Enable the Hot Key Power Off function.
  Disabled : Disabled the Hot Key Power Off function.

Step 6 : Press the <ESC> key, and save the setup in CMOS. then turn off the system power.

Step 7 : After system boot, you can use the hot key <CTRL+ALT+ Backspace> to turn off your system.

2. Ring Power UP Control : If you have the external Modem connect to serial port. This option allows the user to power on the system when the ring come in from external Modem.

Enable or Disable the Ring Power UP function:

Step 1 : Turn on or reboot the system. After a series of diagnostic check, you are asked to press DEL to enter Setup.

Step 2 : Press the <DEL> key to enter Award BIOS program and and the main screen appears:

ROM PCI / ISA BIOS 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 SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑↓→← : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

【4】

Step 3 : Choose "INTEGRATED PERIPHERALS" from the Main

menu and a screen with a list of items appears:

ROM PCI / ISA BIOS INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.			
Internal PCI/IDE	: Both	Onboard Parallel Mode	: SPP
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto	PS/2 mouse function	: Enabled
Primary Master UltraDMA	: Auto	USB Controller	: Enabled
Primary Slave UltraDMA	: Auto	USB Keyboard Support	: Disabled
Secondary Master UltraDMA	: Auto	Ring Power Up Control	: Enabled
Secondary Slave UltraDMA	: Auto	Power Up by Alarm	: Disabled
IDE Burst Mode	: Disabled		
IDE Data Port Post Write	: Enabled		
IDE HDD Block Mode	: Enabled		
Onboard FDD Controller	: Enbaled		
Onboard Serial Port 1	: Auto		
Onboard Serial Port 2	: Auto		
UART 2 Mode	: Standard	ESC : Quit ↑↓→← : Select Item	
		F1 : Help PU/PD/+/- : Modify	
		F5 : Old Values (Shift) F2 : Color	
Onboard Parallel Port	: 378/IRQ7	F7 : Load Setup Defaults	

Step 4 : Choose the item "Ring Power UP Control", setted to
        Enabled   : When the ring come in, turn the system
                       power on.
        Disable   : Settin this function to disabled.

Step 5 : Press the <ESC> key, and save the setup in CMOS.

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【4】

3. Power Up by Alarm : This option allows the user to select a date and
                      time that the computer can automaticall turn on
                      and start up. The date can be set by month and

day, and the time can be set by hour, minute and
second.

Enable or Disable the Power Up by Alarm function:

Step 1 : Turn on or reboot the system. After a series of diagnostic
check, you are asked to press DEL to enter Setup.

Step 2 : Press the <DEL> key to enter Award BIOS program and
the main screen appears:

ROM PCI / ISA BIOS 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 SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑↓→← : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

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Step 3 : Choose "INTEGRATED PERIPHERALS" from the Main

menu and a screen with a list of items appears:

```
                    ROM PCI / ISA BIOS
                 INTEGRATED PERIPHERALS
                  AWARD SOFTWARE, INC.


Internal PCI/IDE              : Both      Onboard Parallel Mode          : SPP
IDE Primary Master PIO        : Auto
IDE Primary Slave PIO         : Auto
IDE Secondary Master PIO      : Auto
IDE Secondary Slave PIO       : Auto      PS/2 mouse function          : Enabled
Primary Master UltraDMA       : Auto      USB Controller               : Enabled
Primary Slave UltraDMA        : Auto      USB Keyboard Support         : Disabled
Secondary Master UltraDMA     : Auto      Ring Power Up Control        : Enabled
Secondary Slave UltraDMA      : Auto      Power Up by Alarm            : Disabled
IDE Burst Mode                : Disabled
IDE Data Port Post Write      : Enabled
IDE HDD Block Mode            : Enabled


Onboard FDD Controller        : Enbaled
Onboard Serial Port 1         : Auto
Onboard Serial Port 2         : Auto
UART 2 Mode                   : Standard  ESC  : Quit        ↑↓→←      : Select Item
                                          F1   : Help        PU/PD/+/- : Modify
                                          F5   : Old Values  (Shift) F2 : Color
Onboard Parallel Port         : 378/IRQ7  F7   : Load Setup Defaults
```

Step 4 : Choose the item "Power Up by Alarm", set to
Enabled : Enable the Power UP by Alarm function.
Disabled : Disable the Power UP by Alarm function.

Step 5 : After setting "Power UP by Alarm" to Enabled, the screen
with a list of items appears:

```
┌─────────────────────────────────────────────────────────────────────┐
│                      ROM PCI / ISA BIOS                              │
│                    INTEGRATED PERIPHERALS                            │
│                    AWARD SOFTWARE, INC.                              │
│                                                                     │
├─────────────────────────────────────┬───────────────────────────────┤
│ Internal PCI/IDE          : Both    │ Onboard Parallel Mode    : SPP │
│    IDE Primary Master PIO : Auto    │                                │
│ IDE Primary Slave PIO     : Auto    │                                │
│ IDE Secondary Master PIO  : Auto    │                                │
│ IDE Secondary Slave PIO   : Auto    │ PS/2 mouse function   : Enabled│
│ Primary Master UltraDMA   : Auto    │ USB Controller        : Disabled│
│ Primary Slave UltraDMA    : Auto    │                                │
│ Secondary Master UltraDMA : Auto    │ Power Button over Ride : Enabled│
│ Secondary Slave UltraDMA  : Auto    │ Ring Power Up Control  : Disabled│
│ IDE Burst Mode        : Disabled    │ Power Up by Alarm      : Enabled│
│ IDE Data Port Post Write : Enabled  │ Month Alarm           : NA     │
│ IDE HDD Block Mode    : Enabled     │ Day of Month Alarm    : 0      │
│                                     │ Week Alarm                     │
│ Onboard FDD Controller : Enbaled    │ *** SUN MON TUE WED THU FRI SAT **│
│ Onboard Serial Port 1  : Auto       │    off  off  off  off  off  off off│
│ Onboard Serial Port 2  : Auto       │ Time (hh:mm:ss) Alarm    : 7:11: 0│
│ UART 2 Mode            : Standard    ├────────────────────────────────┤
│                                     │ ESC : Quit      ↑↓→←  : Select Item│
│                                     │ F1  : Help    PU/PD/+/- : Modify│
│                                     │ F5  : Old Values  (Shift) F2 : Color│
│ Onboard Parallel Port  : 378/IRQ7   │ F7  : Load Setup Defaults       │
└─────────────────────────────────────┴───────────────────────────────┘
```

Step 6 : Set the Month Alarm : NA, 1 to 12.
          NA   : Disregard the month.
          1 to 12 : From January to December.

Step 7 : Set the Day of Month Alarm : 0, 1 to 31
          o   : Disregard the day.
          1 to 31 : The day of month from first to 31th

Step 8 : Week Alarm   : Sunday to Saturday
          All set to Off   : Disregard the week.
          Some set to On : The system will Power UP on the day(s)
                             you choose.

Step 9 : Set the Time (hh:mm:ss) Alarm : hh:mm:ss

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Step 10 : Press the <ESC> key, and save the setup in CMOS.

then turn off the system power.

Step 11 : The system will compare your settings with the system STANDARY CMOS SETUP day and time, If they match, the system will turn on automaticall.

(C) Modem Ring Power-On

∗ What is the modem ring power-on function?
While in Soft-off state, if an external modem ring-up signal occurs, the system wakes up and can be remotely accessed. Please see Power Management (Section 3-4) for setting information.

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5. IDE Drivers

5-1 Introduction

IDE drivers for this mainboard are included as a part of the CD-ROM disk that is enclosed in the mainboard package. These drivers support Ultra DMA-33 timings and you may refer to the SiS website at http://www.sis.com.tw for more information.

The following application programs are supported by the enclosed CD-ROM:

◎　　　DOS

◎　　　Windows 3.x

◎　　　Windows 95

◎　　　Windows NT 3.5x/4.x

◎　　　OS2 Warp 3.0

◎　　　Netware 3.x/4.x

5-2 SiS IDE Driver Installation For DOS

1. Run D:\>IDE\INSTALL.EXE (assume D drive is CD-ROM drive) from the enclosed CD-ROM to install SiS IDE DOS PIO mode driver or SiS IDE DMA mode driver.

2. INSTALL.EXE program will add the following line in CONFIG.SYS file:
   "DEVICE=C:\SISIDE\SISDR.SYS" for PIO mode driver or
   "DEVICE=C:\SISIDE\SISDR.SYS/M" for DMA mode driver.

3. Users can use /A /R parameters to set the wait states and IDE BUS MASTER CONFIGURATION SPACE BASE ADDRESS manually.
   For example:
   "DEVICE=C:\SISIDE\SISDR.SYS/A3456/R6543"
   means active time for channel 0 master is 3 *30ns
   　　　　　　　channel 0 slave is 4*30ns
   　　　　　　　channel 1 master is 5 *30ns
   　　　　　　　channel 1 slave is 6 *30ns

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recovery time for channel 0 master is 6 * 30ns
　　　　　　　channel 0 slave is 5 * 30ns
　　　　　　　channel 1 master is 4 * 30ns
　　　　　　　channel 1 slave is 3 * 30ns

4. Hard Drives' default wait states are set by using Hard Drive internal information automatically.   The recommended value table for different mode Hard Drives is as follows:

```
Hard Disk Mode    4    3    2    1    0
=======================================================
Recovery Time     1    3    8    A    0
Active Time            3    3    6    6    0
=======================================================
```
Note that the range for Recovery Time is 0-F
        and for Active Time is 0-7.

5. After IDE DOS driver installed. Some mode 4 hard disks may cause the system hang when we reboot the system. Users can avoid this by downing the speed in manual way as described in 03)04).
For example, change
"DEVICE=C:\SISIDE\SISDR.SYS" into
"DEVICE=C:\SISIDE\SISDR.SYS/A3/R3"

5-3 SiS IDE Driver Installation For Windows 3.x

1. Run D:\>IDE\INSTALL.EXE(assume D drive is CD-ROM drive) from the enclose CD-ROM   disk to install the SiS IDE WINDOWS PIO mode driver or SiS IDE Windows DMA mode driver.

2. The INSTALL.EXE program will add the following lines in the [386Enh] section o the SYSTEM.INI file in your Windows directory:

For PIO mode driver
    "device=siswindv.386"
    "device=intl3.386"

For DMA mode driver
    "device=siswindv.386"
    "device=int13.386"
    "sis_master=on"

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You can Uninstall the SiS IDE Windows driver by using the INSTALL.EXE program's uninstall function or directly adding a " ; " or " * " symbol in the above lines after the first quotation marks.

For example: "siswindv.386" change to " ;device=siswindv.386"

Also, you can run a PIO mode driver after installing a DMA mode driver by changing the setting "sis_master=on"

                      into " ;sis_master=on"

                  or   " sis_master=off"

3. After installing the IDE driver, you can turn on the 32-Bit Disk Access and 32-bit File Access(32-Bit File Access only available in Windows for Workgroups to improve performance.

To change disk access and file access:
 a) Enter WINDOWS and choose the "386 Enhance" icon from "Control Panel"
 b) Choose the "Virtual Memory" button
 c) Choose the "Change" button
 d) Change the appropriate settings
 e) Choose the "OK" button
 f) In the "Virtual Memory" dialog box, choose the "Yes" button

4. The hard disk cannot work with the CD-ROM on the same channel when 32-Bit File Access is on. You should either install the devices in different channels or turn the 32-Bit File Access off.

5-4 SiS IDE Driver Installation For Windows 95

1. Put SiS IDE Drivers CD-ROM into the drive.

2. Run the file "setup.exe" under "D:\>IDE\WIN95" directory and follow the instructions to install the SiS IDE Windows 95 PIO/DMA drivers.

5-5 SiS IDE Driver Installation For Windows NT 3.5x

1. From the Options menu in " ^Windows NT setup," choose "Add /Remove SCSI Adapters"

2. In the SCSI Adapter Setup dialog box, choose the "Add" button

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3. In the " ^Adapter:" list dialog box, choose " ^Other(Requires a disk from a hardware manufacturer)"

4. Next, you will see the "Insert Diskette" dialog box. Insert the CD-ROM into the CD-ROM drive, and change path to "D:\IDE\NT" (CD-ROM Drive) in dialog box. ***(assume D drive is the CD-ROM drive) ***

5. Next, In "Select OEM Option " dialog box, choose SiS PCI MASTER IDE Miniport Driver " and click " OK "

6. In the " Select SCSI Adapter Option " dialog box, click on the "Install" button in the dialog box.

7. When the "SCSI Adapter Setup " dialog box reappears, check whether " IDE CR-ROM [ATAPI 1.2]/Dual_channel PCI IDE " is listed. If yes, select it with the mouse and click the " ^Remove" button.

8. Installation is successful if the "SCSI Adapter Setup " dialog box reapears, and "SiS PCI MASTER IDE Miniport Driver " is listed as an installed driver.

9. Reboot your system.

5-6 SiS IDE Driver Installation For Windows NT 4.0

1. Enter Windows NT 4.0 System
2. Double click the "My Computer" icon on the Desktop
3. Double click the "Control Panel" icon in "My Computer"
4. Double click the "SCSI Adapters" icon in "Control Panel"
5. Select "Drivers" option in "SCSI Adapters" and click "Add"
6. Insert the SiS IDE Driver diskette into the CD-ROM Drive and click "Have Disk" in "Install Driver" window
7. Change path to "D:\IDE\NT" CD-ROM Driver) and click "OK" in "Install From Disk" window
    (assume D drive is the CD-ROM drive)
8. Choose "SIS PCI MASTER IDE Miniport DRIVER" in "Install Driver" and click "OK"
9. Change path to "NT" and click "Continue" in "windows NT Setup" window
10. Click "Yes" to restart computer in "System Settings Change" window

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5-4
_____ **【5】**

5-7 SiS IDE Driver Installation For OS/2

[Install from CD-ROM]

```
=========================================================
1. Put the Driver CD in CD-ROM Drive.
2. Open OS2 Windows or OS2 Full Screen.
3. Change Drive to CD-ROM Drive.
4. Change Directory to\IDE\OS2.
5. Run INSTOS2.EXE
6. Reboot OS/2 system.
=========================================================
```

[Note 1] Default Transfer Mode is Master DMA Mode
[Note 2] Add/!Moption after BASEDEV=SISIDE.ADD in
         CONFIG.SYS to disable ^Master DMA Mode

6. VGA DRIVERS

6-1 Introduction

To make use of the advanced features of SiS 5597/5598 chipsets, softward drivers developed by SiS support application programs, extended graphics and text modes. You may also refer to the SiS website at http://www.sis.com.tw for more information.

The following applications programs are supported by the enclosed CD-ROM:

◎　　DOS Utility (SVGAUTL.EXE)

◎　　Autodesk ADI 4.2-Protected Mode
　　　♦　AutoCAD/386 Release 11, 12
　　　♦　AutoShade R2.0 SetupCAD/386 Release 11, 12
　　　♦　3D Studio Version 3.0 Setup

◎　ET24 (Chinese)

◎　Microsoft Windows NT Ver. 3.5, 3.51 & 4.0

◎　Microsoft Windows 95

◎　Microsoft Windows 3.x

◎　IBM OS/2 Warp 3.0 (Double Byte Character)

◎　IBM OS/2 Warp 3.0 (Single Byte Character)

6-2 DOS Utility

SVGAUTL.EXE

General Description
SVGAUTL.EXE is one of the SiS 5597/5598 utilities. It supports three functions:

  (1) Video Mode Setting
  (2) Frame Rate Setting
  (3) Power Saving Setting

Since SiS 5597/5598 supports many enhanced Text Modes and Graphic Modes, you can use SVGAUTL.EXE to select the desired video mode.

For 640x480, 800x600, 1024x768, and 1280x1024 resolutions, SiS 5597/5598 supports multiple frame rates. If your monitor can synchronize with these frame rates, you can use SVGAUTL.EXE to get the best advantage.

SiS 5597/5598 also supports VESA DPMS Power Saving Modes. SVGAUTL.EXE can help you set this capability.

How to Install
To use SVGAUTL.EXE,

(1) Type "SVGAUTL" in the directory where it resides.
    For example,
    D:\>MM\DOS\SVGAUTL <Enter> (assuming SVGAUTL.EXE resides in CD-ROM "D")

(2) The Main Menu will appear and direct you to configure SiS 5597/5598.

(3) When you complete configuration, you may save your preferences to the AUTOEXEC.BAT file and use it as your power-on (or hardware reset) default environment.

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What the Parameters Represent

The meaning of parameters used by SVGAUTL.EXE are explained below:
Syntax:

>SVGAUTL [/D:mode_no] [/F0:n0] [/F1:n1] [/F2:n2] [/F3:n3] [/PA:ta] [/PB:tb]
where
/D: Set the Video Mode to be mode_no which is a hex number.
     For example: Set 1024x768 256 color graphic mode.
                              >SVGAUTL/D:38<Enter>
/F0: For 640x480, set frame rate to be n0 Hz.
     Three available frame rates are 60, 72, and 75Hz.
     For example: Set 640X480 graphic mode with 60Hz frame rate
                              >SVGAUTL/F0:60<Enter>
/F1: For 800x600, set frame rate to be n1 Hz.
     Four available frame rates are 56,60,72, and 75 Hz.
     For example: Set 800x600 graphic mode with 72Hz frame rate.
                               >SVGAUTL/F1:72<Enter>
/F2: For 1024x768, set frame rate to be n2 Hz.
     Four available frame rates are 87 (Interlace), 60, 70, and 75Hz.
     For example: Set 1024x768 graphic mode with 60Hz frame rate.
                              >SVGAUTL/F2:60<Enter>
/F3: For 1280x1024, set frame rate to be n3 Hz.
     Two available frame rates are 87 (Interlace) and 60Hz.
     For example: Set 1280x1024 graphic mode with 60Hz frame rate.
                              >SVGAUTL/F3:60<Enter>
/PA:Set Standby Timer to be ta minutes. (0< ta < 15 min.)
     For example: Set Standby Timer be 5 minutes.
                              >SVGAUTL/PA:5<Enter>
/PB:Set Suspend Timer to be tb minutes. (0< tb < 15min.)
     For example: Set Suspend Timer be 5 minutes.
                              >SVGAUTL/PB:5<Enter>

Note:

(1)   Suspend Time is "ta + tb"(i.e. standby time + suspend time)
(2)   The timers are not very accurate

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Autodesk ADI 4.2 - Protected Mode

General Description

Driver Files

(1)   The enclosed CD-ROM contains the following SiS 5597/5598 ADI file:
      RCPSIS.EXP SiS ADI driver (for all resolutions & colors)
      Note: This version of the ADI driver does not support 16-color operation.
(2)   This driver fits for a series of Autodesk Inc. products including:
      1 - AutoCAD/386 R11
      2 - AutoCAD/386 R12
      3 - AutoShade/386 V2.0
      4 - 3D Studio V3.0
(3)   Their installation procedures are different from program to program.
      The first step of installation is the same for all these programs. Make sure
      you unpack and copy drivers to where you would like them to reside.
(4)   A detailed description of the installation procedures for each program is
      given in Sec. 1.2.2 to Sec. 1.2.5.

Unpack & Copy

To unpack and copy drivers please perform the following procedures:
(1)   Run "INSTDRV.EXE" where it resides. For example,
      D:\>MM\DOS\INSTDRV <Enter> (assuming INSTDRV.EXE resides in
      CD-ROM "D")
(2)   In SiS's Super VGA Driver Installation menu, select "A. ADI 4.2" to unpack
      and copy drivers. (To select, type "A")
(3)   In "Unpack & Copy ADI 4.2 Drivers" screen, **key in the "drive:\directory"**
      where these drivers will reside (default C:\ADI42) The program will unpack
      and copy all related driver files to designation you assign.
(4)   After unpack and copy are complete, exit the INSTDRV.EXE program.
(5)   Refer to Sec. 1.2.2 to Sec. 1.2.5 for the installation procedures of each
      program.

AutoCAD R11 Setup

(1)   The following procedures assume that
      1 - You have completed the unpack & copy procedure.
      2 - Your ADI 4.2 drivers are located in C:\ADI 42.
(2)   Add the following setting to your own batch file for AutoCAD R11 (i.e.
      ACADR11.BAT) or to your AUTOEXEC.BAT file:
      SET DSP ADI=\ADI42\RCPSIS.EXP<Enter>

(3)   Delete the configuration file ACAD.CFG that resides in the \ACAD directory.
(4)   Type **ACADR11 <Enter>** to configure your AutoCADR11 system.
(5)   In "Select Display Device:" item, choose "ADIP386 V4.0/4.1 display."

(6) In "Select Display Resolution" screen, choose which display driver you want to use.

(7) Perform the listed instructions on the screen and the system will start with the selected display setting.

AutoCAD R12 Setup

(1) The following procedures assume that
 1 - You have completed the unpack & copy procedure.
 2 - Your SiS ADI 4.2 drivers are located in C:\ADI 42.
 3 - Your AutoCAD R12 program is located in C:\ACADR12.
 4 - Your AutoCAD R12 default drivers are located in C:\ACADR12\DRV.
 5 - Your AutoCAD R12 configure file ACAD.CFG is located in C:\ACADR12.

(2) Copy the **RCPSIS.EXP** driver file to C:\ACADR12\DRV. You may complete this step with the following command:
 COPY C:\ADI42\RCPSIS.EXP C:\ACADR12\DRV

(3) Delete your original ACAD.CFG file. You may complete this step with the following command:
 DEL C:\ACADR12\ACAD.CFG

(4) Restart your AutoCAD R12 program as usual.

(5) AutoCAD R12 will ask you to complete the configuration procedures since it cannot find the configuration file ACAD.CFG.

(6) Follow the instructions of AutoCAD R12 to proceed with configuration.

(7) In "Available Video Displays:" item, choose the "SiS Super VGA ADI v4.2 Display and Rendering driver" item.

(8) In "Select Display Resolution" screen, choose which display driver you want to use.

(9) Perform the listed instructions and the system will start with the selected display setting.

AutoShade R2.0 Setup

(1) The following procedures assume that
 (1) You have completed the "unpack & copy" procedure.
 (2) Your ADI 4.2 drivers are located in C:\ADI 42.

(2) Add the following settings to your own batch file for AutoShade R2.0(i.e. SHADE2.BAT) or to your AUTOEXEC.BAT file.
 (a) For display driver settings: **SET DSPADI =\ADI42\RCPSIS.EXP**
 (b) For rendering driver settings: **SET RDPADI =\ADI42\RCPSIS.EXP**

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(3) Delete the configuration file SHADE.CFG.

(4) Type **SHADE2 <Enter> t**o re-configure the AutoShade.

(5) While prompting "Select display device" choose "P386 AutoDesk Device

Interface display driver."
(6)　While prompting "Select rendering display driver:"
　　　choose "P386 AutoDesk Device Interface rendering driver."
(7)　Perform all the listed instructions and the system will start with the disired display settings.

3D Studio Version 3.0 Setup

(1)　The following procedures assume that
　　　1 - You have completed the unpack & copy procedure.
　　　2 - Your ADI 4.2 drivers are located in C:\ADI 42.
(2)　Creat your own **3D Studio V3.0 batch file (say 3DS3.BAT)** and add the following settings to it, or add the following settings to your **"AUTOEXEC.BAT** file:
　　　1 **- SET RCPADI=C:\ADI42\RCPSIS.EXP**
　　　2 **- SET RDPADI=C:\ADI42\RCPSIS.EXP**
(3)　Execute the new 3DS batch file or reboot the computer using the new "AUTOEXEC.BAT" to make the new settings effective.
(4)　Change your current working directory to \3DS3 (where your 3D Studio V3.0 usually resides).
(5)　Delete the original configuration file "3DADI.CFG."
(6)　Type **3DS VIBCFG <Enter>** to configure your display environment.
(7)　After the "Company Register Screen" appears press **<Enter>** to continue.
(8)　The "Video Environment Configuration Screen" will appear. Please follow the following procedures to configure your video display environment.
　　　(1)　　　In "Main-Display" item,
　　　　　(a)　Press **<Enter>.** The selection menu will appear.
　　　　　(b)　In selection menu, move cursor to **"RCPADI"**
　　　　　(c)　Press **<Enter>** to select.
　　　(2)　　　In "Material - Display" item,
　　　　　(a)　Press **<Enter>.** The selection menu will appear.
　　　　　(b)　In selection menu, move cursor to **"RCPADI"**
　　　　　(c)　Press **<Enter>** to select.
　　　(3)　　　In "Render-Display" item,
　　　　　(a)　Press **<Enter>.** The selection menu will appear.
　　　　　(b)　In selection menu, move cursor to **"RCPADI"** or **"RDPADI.".**
　　　　　(c)　Press **<Enter>** to select.
　　　(4)　　　Complete the other selections and exit configuration.

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(9)　After the exiting configuration, 3DS will boot automatically using the environment you just selected.

(10)   If your previous configuration is good, 3DS will ask you to make a detailed configuration for SiS 5597/5598 drivers. If this does not happen, please check your previous configuration.

(11)   In the detailed configuration for SiS 5597/5598 drivers, follow the instructions that appear on the screen and make your own choices.

(12)   After the detailed configuration, you will enter the 3DS main display screen and you may begin your 3D Studio work in the environment you just made.

(13)   Once completing the detailed configuration, you may enter 3D Studio by typin **\3DS3\3DS <Enter>**

(14)   To change your video configuration again, follow the procedures mentioned above.

6-3 ET24 (Chinese)

This is an ETen Chinese System Display driver (ETDSPDRV.COM) for SiS VGA chips.

(1)   To install this driver **Copy** "SVGAUTL.EXE" to <drive>:\<directory>, i.e. C:\SiS.

(2)   In default mode (1024x768x16c, 87Hz Interlaced), this Display Driver will force ET Chinese System to "software scrolling" (scrolling with slower speed). To make use of "hardware scrolling," you must set the Frame Rate to non-interlaced mode before entering ET Chineses system. Do so by adding the following line to the top of the Autoexec.bat or ET24.bat file. The last two number of the line correspond with the refresh rate of your monitor:

    <drive>:\<directory>\SVGAUTL/F2:60 (for 60Hz non-interlaced mode)

(3)   You may also use F2:70 and F2:75 for 70Hz and 75Hz non-interlaced modes. Here is an example:

    "C:\SiS\SVGAUTL/F2:60" to Autoexec.bat or ET24.bat

(4)   Please note that some monitors may not support 70Hz and 75Hz non-interlaced modes.

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6-4 Windows NT 3.5 & 3.51

Driver Files
(1)   The enclosed SiS 5597/5598 Windows NT 3.5 & 3.51 drivers are:
    SISTAG
    SISV.SYS
    SISV256.DLL
    SISV.DLL
    OEMSETUP.INF
(2)   All the 16-color, 256-color, 32K/64K-color, and 16M-color drivers are available

Installation
(1)   Select Control Panel from Main group.
(2)   Select Display icon.
(3)   Select Change Display Type from Display Settings.
(4)   Select Change from Display Type.
(5)   Select Other from Select Device.
(6)   Place the CD-ROM disk in to the CD drive.
(7)   When the "Install from Disk" dialog box appears, type the directory storing
        the drivers and click "OK." The directory in the CD-ROM is at
        D:\MM\WINNT\WINNT35
(8)   Select Install and click "Yes" when the "Installing Driver" dialog box appears.
(9)   Select "New" when the "Windows NT Setup" dialog box appears.
(10)   Click "Continue."

A message will appear stating that the drivers were successfully installed. Click
"OK." You must now restart Windows NT 3.51.

Selecting Resolution and Color Depth
(1) Select Control Panel from Main group.
(2) Select Display Icon.
(3) Select Color Palette to change between 16 colors, 256 colors, 32768 colors,
      65536 colors, and 16777216 colors.
(4) To select desktop resolution size, go to the Desktop area and use the slide bar
      to change resolution from 640x480, 800x600, 1024x768, and 1280x1024.
(5) Select "Test" to test the resolution.
      If the display test screen was good then select "Yes" when the "Testing Mode'
      dialog box appears. If the display test screen was bad then select "No."
      Windows NT will give you an error message.
(6) If the display test screen was good and you select "Yes" Windows NT 3.51
      will prompt you to restart Windows NT 3.51.

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6-5 Windows NT 4.0

Driver Files
(1)   The enclosed SiS 5597/5598 Windows NT 4.0 drivers are:
    SISV.SYS
    SISV256.DLL
    SISV.DLL
    SISV5597.INF
(2)   All the 16-color, 256-color, 32K/64K-color, and 16M-color drivers are available

Installation
(1)   Click "Start" menu and select Control Panel from Settings group.
(2)   Select Display icon.
(3)   Select Settings of Display Properties.
(4)   Select Display Type.
(5)   Select Change from the Adapter Type area.
(6)   Select Have Disk of Change Display.
(7)   Place CD-ROM disk in to the CD drive.
(8)   When the "Install from Disk" dialog box appears, type the directory storing
       the drivers   and click "OK."   The directory in the CD-ROM is at
       D:\MM\WINNT\WINNT40.
(9)   Click on Open when the filename appears on screen.
(10) Click on "OK" when the "Install From Disk" dialog box appears again."
(11) When the "Change Display" dialog box appears, click "OK."
(12) When the "Third-party Drivers" dialog box appears, click "Yes."

A message will appear stating that the drivers were successfully installed. Click
"OK." You must now restart Windows NT 4.0. Upon restarting, you will be
prompted to test the new driver. After testing is completed, you will need to
restart Windows NT again.

Selecting Resolution and Color Depth
(1) Click "Start" menu and select Control Panel from Settings group.
(2) Select Display icon.
(3) Select Settings.
(4) Select Color Palette to change between 16 colors, 256 colors, 32768 colors,
      65536 colors, and 16777216 colors.
(5) To select desktop resolution size, go to the Desktop area and use the slide bar
      to change resolution from 640x480, 800x600, 1024x768, and 1280x1024.
(6) Select Test to test the resolution. If the display test screen was good then sele
      "Yes" when the "Testing Mode" dialog box appears. If the display test screen
      was bad then select "No." Windows NT 4.0 will give you an error message.
(7) Click "OK" If the display test screen was good and you select "Yes" Windows
      NT 4.0 will change the mode without restarting Windows NT 4.0.

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6-6 Windows 95

Driver Files
(1) The enclosed SiS 5597/5598 Windows 95 drivers files are:
>   **SETUP.EXE**
>   **SIS597.DRV**
>   **SIS597.INF**
>   **SISMINI.VXD**
>   **Other Flies Related to driver installation**
(2) All the 16-color, 256-color, 32K/64K-color, and 16M-color drivers are available

Installation
(1) Click "Start" menu and select "Control Panel" from "Setting" group.
(2) Select "Display" Icon.
(3) Select "Settings" index in the display properties sheet.
(4) Select "Advanced Properties" button.
(5) Select "Change..." button in "Adapter Type" group.
(6) Select "Have Disk" button.
(7) Place CD-ROM disk in to the CD drive.
(8) When the "Install from Disk" dialog box appears, type the directory storing
     the drivers and click "OK." The directory in the CD-ROM is at
     D:\MM\WIN95
(9) The "Select Device" dialog box will appear, showing the driver. Click on "OK"
     and the driver will be installed.
(10) When the "Advanced Display Properties" dialog box appears, click "Close."
(11) Select "Close" or "Apply" button from display properties sheet.
(12) A message will appear stating you must restart the Windows 95 system,
     select "Yes" to restart.
(13) After restarting, Windows 95 will run on 640x480x256 color, 60NI.

Selecting Resolution, Color Depth and Refresh Rate
(1) Click "Start" menu and select Control Panel from Settings group.
(2) Select Display icon.
(3) Select Settings.
(4) Select "Settings" then to chage between 16 color, 256 color, Hi color, and
     True color.
(5) To select desktop resolution size, go to the Desktop area and use the slide bar
     to change resolution from 640x480, 800x600, 1024x768, and 1280x1024.
(6) Select "Display Modes".
(7) Select value in Refresh rate list box to change the screen refresh rate.
(8) Click "OK" or "Apply."

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Utilities
(1) Place CD-ROM disk in to the CD drive.

(2) Click "Start" menu and select "Run..." menu item.

(3) In "Run" dialog, type the source execution file then press "OK." The execution file in the CD-ROM is at D:\MM\WIN95\SETUP.EXE."

(4) The setup procedure will create a "SiS Multimedia Vx.xx" program group which will contain3 items:
- Multimedia Manager
- SiS MMPlayer
- Center Screen

(5) A setup successful dialog will appear when setup is complete. The user can choose to restart system now or restart later.

6-7 Windows 3.1

Driver Files

(1) The enclosed SiS 5597/5598 Windows 3.1 driver contains the following files (in compressed format):
  SETUP.EXE
  Other Files Related to driver installation

Installation

(1) Click "File" menu and select "Run..." menu item.

(2) In "Run" dialog, type the source execution file then press "OK".
  The execution file in the CD-ROM is at D:\MM\WIN31\SETUP.EXE".

(3) Follow the setup program on-screen instructions.

(4) Setup procedure will create a "SiS Multimedia Vx.xx" program group which will contain 5 items:
- Multimedia Manager
- SiS MMPlayer
- SVGA Setup
- Center Screen
- Uninstall

(5) A successful setup dialog will apear when setup complete. The user can choose restart the system now or restart later.

Graphics Setup

(1) In "SiS Multimedia Vx.xx" program group, choose the "SVGA Setup" icon to enter "SiS VGA Configuration System" screen.

(2) In the "SiS VGA Configuration System" Screen, choose which options you would like to use.

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(3)   After completing your selections, choose "OK" to make all your selections effective.

(4) Choose "Restart Windows" to re-boot Windows using new settings or choose "Continue" to continue your current Windows processes. The next time you re-boot Windows, the new settings will take effect.

Power Saving Setup in Windows

(1) In "SiS VGA Configuration System" screen, choose the "Power Saver" item to enter the Power Saver screen.
(2) In Power Saver screen, choose which options you would like to use.
(3) After completing the selections, choose "OK" to make all your selections effective.
(4) After completing setup, the power saver will take effect according to your specified times and you may continue your normal process.

Zoom Key Setup

(0) In "SiS VGA Configuration System" screen, choose "zooming" item to define "hot keys" for zoom-in or zoom-out screen without entering setup program. The operation principles of zoom-in and zoom-out are as follows:

   (1)   The resolution change sequence for zoom-in is
           1024x768   ===>   800x600   ===>   640x480
   (2)   The resolution change sequence for zoom-out is
           640x480   ===>   800x600   ===>   1024x768
   (3)   You must first be able to zoom-in before you may zoom-out. In other words, you can not get a resolution larger than that which you setup.

   To use this feature, please follow the following procedures.

(1) In the "SiS VGA Configuration System" screen, choose "zooming" item to enter "Zooming Hotkey" screen.
(2) In "Zooming Hotkey" screen, choose which "hot key" you would like to use and enable it.
(3) After completing the selections, choose "OK" to make all your selections effective.
(4) After complete setup, you may use your own defined hot key to zoom-in or zoom-out.

Notes

(1) The power saver   timer settings will be effective when exiting Windows and going to DOS.

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Video Operations

DCI Function

SiS 5597/5598 supports DCI drivers for software MPEG playback and other media player programs which can take advantage of DCI. The SiS 5597/5598 DCI driver is automatically loaded during "Windows Driver Unpack & Copy" process. It should be transparent to the end-user and any media players can take advantage of it.

SiS MMPlay (SW MPEG)
To make SW MPEG playback more friendly than original SW MPEG player suppliers provided, SiS provides an MMPlayer application program to provide a VCP-like (Video Cassette Player) interface.

To take advantage of the SiS MMPlayer, you must first install "SW MPEG Player."   SiS has provided an interface but not a SW MPEG Player. If the SW MPEG Player does not exist, the SiS MMPlayer will not work. (Xing or Mediamatics SW MPEG Player supported.)

To use the SiS MMPlayer follow the procedures below:

(1)   In "SiS Multimedia Vx.xx" program group, choose "SiS MMPlayer" icon and the SiS MMPlayer VCP-like icon will appear.
(2)   Enjoy the SW MPEG playback.

MMPLAY.EXE Button Description

▬	Power On/Off
▼	Open File & Type Control
⬍	Minimize This Application
⏏	Eject CD Title (Not implemented yet.)
◀◀	Fast Backward
▶▶	Fast Forward
I▼	Mark in
▼I	Mark out

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‖	Pause
▶	Play
■	Stop
▶‖	End
‖◀	Home
▲	Volume increase (Not implemented yet)
▼	Volume decrease (Not implemented yet)
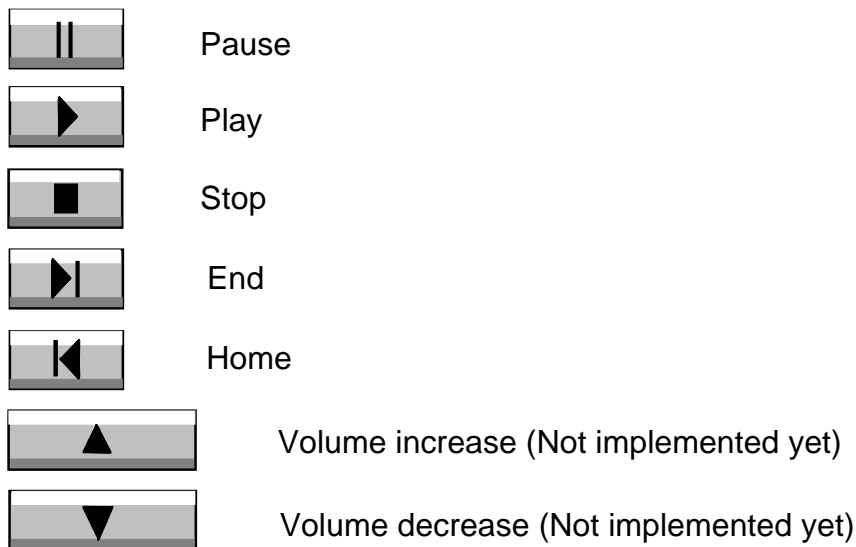
6 - 8 IBM OS/2 Warp 3.0 (Double Byte Character)

OS/2 Version Notes
(1)   The following description applies to " Double Byte Character IBM OS/2 Warp 3.0" only (i.e. Chinese, Japanese, Korean etc.).
(2)   For Single Byte Character Versions IBM OS/2 Warp 3.0 installation, please refer to the next section.".

Driver Files
(1)   The enclosed SiS 5597/5598 Double Byte OS/2 3.0 driver contains the following files:

SETUP.CMD	Program to install SiS drivers
SVGA.EXE	SiS PMI generator
S768256.DL@	SiS IBMDEV32.DLL display driver
OTHERS	other files required during installation

Installation
For Double Byte OS/2 Warp limitation, the installation process is a two-phase installation. The installation cannot be completed in a one step process.
1st phase: copy files, modify "config.sys," create "SiS Install" icon the shutdown and re-boot OS/2.
2nd phase: double clicks "SiS Install" icon to complete the installation

Before installing SiS 5597/5598 OS/2 drivers, make sure you:
(1)   Install an OS/2 system using **"VGA display"** option (i.e. standard VGA).
(2)   Start your OS/2 system.

Install SiS 5597/5598 OS/2 Warp drivers according to the following procedures:

1st phase:
(1)   Enter "OS/2 window" or "OS/2 full screen.".
(2)   Change directory to which holds the SiS 5597/5598 OS/2 3.0 display drivers and type **SETUP** <Enter>. For example, **D:\>MM\OS2\DBCS30\SETUP**.
(3)   All the Driver Files will be copied to a sub-directory C:\SISDRV and an "SiS Install" icon will be created.
(4)   After completing "setup" program, shutdown and re-boot OS/2.

2nd phase:
(5)   After re-booting OS/2, double clicks "SiS Install" icon.
         The "SiS Install" icon would be executed automatically and "Select Screen parameters for SiS SVGA" screen will appeared on the screen.
(6)   Select the desired resolution (and color) and frame rate on this screen, then click "OK" to complete installation. The "SiS Setup" icon will be created for future change modes and frame rate usage.
(7)   After completing installation, shutdown and re-boot OS/2 to make your selection effective.

6 - 9 IBM OS/2 Warp 3.0 (Single Byte Character)

OS/2 Version Notes
(1)   All the OS/2 Warp Versions up to SiS 5597/5598 driver Rev. 1.03 can be installed as described in this section except for Double Byte Character IBM OS/2 Warp 3.0 (i.e. Chinese, Japanese, Korean etc.).
(2)   For IBM OS/2 Warp 3.0 Double Byte installation, please refer to the previous section.

Driver Files
(1)   The enclosed SiS 5597/5598 OS/2 3.0 driver contains the following files:
                SISINST.CMD   SiS driver install program
                SVGA.EXE   SiS PMI Generator
                S768256.DL@   SiS IBMDEV32.DLL Display Driver
                OTHERS   other files required during installation

Installation
Before install SiS 5597/5598 OS/2 drivers, make sure you:
(1)   Install an OS/2 system using **"VGA display"** option (i.e. standard VGA).
(2)   Start your OS/2 system.

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Install SiS 5597/5598 OS/2 Warp drivers as following procedures:

(1)   Enter "OS/2 window" or "OS/2 full screen.".
(2)   Change directory to that which holds the SiS 5597/5598 OS/2 3.0 display drivers and type SISINST <Enter>. For example,
       D:\MM\OS2\SBCS30\SISINST
(3)   All the driver files will be copied to a sub-directory C:\SISDRV and the "Selec Screen parameters for SiS SVGA" menu will appear. All the resolution (and color) and frame rates supported would be shown on the screen.
(4)   Choose which one you would like to use and click "OK.".
(5)   The installation program has completed all installation processes and has created a "SiS Setup" for future change mode usage.
(6)   Shutdown and re-boot OS/2 to make your selection effectively.

6-10 Video Modes

Standard VGA Modes

MODE	TYPE	DISPLAY SIZE	COLORS SHADES	ALPHA FORMAT	BUFFER START	BOX SIZE	MAX. PAGES
0	A/N	320x200	16	40x25	B800	8x8	8
0*	A/N	320x350	16	40x25	B800	8x14	8
0+	A/N	360x400	16	40x25	B800	9x16	8
1	A/N	320x200	16	40x25	B800	8x8	8
1*	A/N	320x350	16	40x25	B800	8x14	8
1+	A/N	360x400	16	40x25	B800	9x16	8
2	A/N	640x200	16	80x25	B800	8x8	8
2*	A/N	640x350	16	80x25	B800	8x14	8
2+	A/N	720x400	16	80x25	B800	9x16	8
3	A/N	640x200	16	80x25	B800	8x8	8
3*	A/N	640x350	16	80x25	B800	8x14	8
3+	A/N	720x400	16	80x25	B800	9x16	8
4	APA	320x200	4	40x25	B800	8x8	1
5	APA	320x200	4	40x25	B800	8x8	1
6	APA	640x200	2	80x25	B800	8x8	1
7	A/N	720x350	4	80x25	B000	9x14	8
7+	A/N	720x400	4	80x25	B000	9x16	8
0D	APA	320x200	16	40x25	A000	8x8	8
0E	APA	640x200	16	80x25	A000	8x8	4
0F	APA	640x350	2	80x25	B000	8x14	2
10	APA	640x350	16	80x25	A000	8x14	2
11	APA	640x480	2	80x30	A000	8x16	1
12	APA	640x480	16	80x30	A000	8x16	1
13	APA	320x200	256	40x25	A000	8x8	1

NOTE: 1. A/N: Alpha/Numeric

2. APA: All Point Addressable (Graphics)

MODE	DISPLAY SIZE	COLORS SHADES	FRAME RATE.	H-SYNC.	VIDEO FREQ.
0	320x200	16	70	31.5K	25.1 M
0*	320x350	16	70	31.5K	25.1 M
0+	360x400	16	70	31.5K	28.3 M
1	320x200	16	70	31.5K	25.1 M
1*	320x350	16	70	31.5K	25.1 M
1+	360x400	16	70	31.5K	28.3 M
2	640x200	16	70	31.5K	25.1 M
2*	640x350	16	70	31.5K	25.1 M
2+	720x400	16	70	31.5K	28.3 M
3	640x200	16	70	31.5K	25.1 M
3*	640x350	16	70	31.5K	25.1 M
3+	720x400	16	70	31.5K	28.3 M
4	320x200	4	70	31.5K	25.1 M
5	320x200	4	70	31.5K	25.1 M
6	640x200	2	70	31.5K	25.1 M
7*	720x350	4	70	31.5K	28.3 M
7+	720x400	4	70	31.5K	28.3 M
0D	320x200	16	70	31.5K	25.1 M
0E	640x200	16	70	31.5K	25.1 M
0F	640x350	2	70	31.5K	25.1 M
10	640x350	16	70	31.5K	25.1 M
11	640x480	2	60	31.5K	25.1 M
12	640x480	16	60	31.5K	25.1 M
13	320x200	256	70	31.5K	25.1 M

Enhanced Video Modes

MODE	TYPE	DISPLAY SIZE	COLORS SHADES	ALPHA FORMAT	BUFFER START	BOX SIZE	MAX. PAGES
22	A/N	1056x352	16	132x44	B800	8x8	2
23	A/N	1056x350	16	132x25	B800	8x14	4
24	A/N	1056x364	16	132x28	B800	8x13	4
25	APA	640x480	16	80x60	A000	8x8	1
26	A/N	720x480	16	80x60	B800	9x8	3
29	APA	800x600	16	100x37	A000	8x16	1
2A	A/N	800x600	16	100x40	B800	8x15	4
2D	APA	640x350	256	80x25	A000	8x14	1
2E	APA	640x480	256	80x30	A000	8x16	1
2F	APA	640x400	256	80x25	A000	8x16	1
30	APA	800x600	256	100x37	A000	8x16	1
37	APA	1024x768	16	128x48	A000	8x16	1
38	APA	1024x768	256	128x48	A000	8x16	1
39	APA	1280x1024	16	160x64	A000	8x16	1
3A	APA	1280x1024	256	160x64	A000	8x16	1
40	APA	320x200	32K	40x25	A000	8x8	1
41	APA	320x200	64K	40x25	A000	8x8	1
42	APA	320x200	16.8M	40x25	A000	8x8	1
43	APA	640x480	32K	80x30	A000	8x16	1
44	APA	640x480	64K	80x30	A000	8x16	1
45	APA	640x480	16.8M	80x30	A000	8x16	1
46	APA	800x600	32K	100x37	A000	8x16	1
47	APA	800x600	64K	100x37	A000	8x16	1
48	APA	800x600	16.8M	100x37	A000	8x16	1
49	APA	1024x768	32K	128x48	A000	8x16	1
4A	APA	1024x768	64K	128x48	A000	8x16	1
4B	APA	1024x768	16.8M	128x48	A000	8x16	1
4C	APA	1280x1024	32K	160x64	A000	8x16	1
4D	APA	1280x1024	64K	160x64	A000	8x16	1

NOTE:　1. A/N: Alpha/Numeric
　　　　2.APA: All Point Addressable (Graphics)

MODE	DISPLAY SIZE	COLORS SHADES	FRAME RATE.	H-SYNC.	VIDEO FREQ.
22	1056x352	16	70	30.5K	40.0 M
23	1056x350	16	70	30.5K	40.0 M
24	1056x364	16	70	30.5K	40.0 M
25	640x480	16	60	31.5K	25.1 M
26	720x480	16	60	31.5K	25.1 M
29	800x600	16	56	35.1K	30.0 M
29*	800x600	16	60	37.9K	40.0 M
29+	800x600	16	72	48.0K	50.0 M
29#	800x600	16	75	46.8K	50.0 M
29##	800x600	16	85	53.7K	56.3 M
2A	800x600	16	56	35.1K	36.0 M
2D	640x350	256	70	31.5K	25.1 M
2E	640x480	256	60	31.5K	25.1 M
2E*	640x480	256	72	37.9K	31.5 M
2E+	640x480	256	75	37.5K	31.5 M
2E++	640x480	256	85	43.4K	36.0 M
2F	640x400	256	70	31.5K	25.1 M
30	800x600	256	56	35.1K	36.0 M
30*	800x600	256	60	37.9K	40.0 M
30+	800x600	256	72	48.0K	50.0 M
30#	800x600	256	75	46.8K	50.0 M
30##	800x600	256	85	53.7K	56.3 M
37i	1024x768	16	87	35.5K	44.9 M
37n	1024x768	16	60	48.4K	65.0 M
37n+	1024x768	16	70	56.5K	75.0 M
37n#	1024x768	16	75	60.2K	80.0 M
37n##	1024x768	16	85	68.7K	94.5 M
38i	1024x768	256	87	35.5K	44.9 M
38n	1024x768	256	60	48.4K	65.0 M

MODE	DISPLAY SIZE	COLORS SHADES	FRAME RATE.	H-SYNC.	VIDEO FREQ.
38n+	1024x768	256	70	56.5 K	75.0 M
38n#	1024x768	256	75	60.2 K	80.0 M
38n##	1024x768	256	85	68.7 K	94.5 M
39i	1280x1024	16	87	48.8 K	80.0 M
39n	1280x1024	16	60	65.0 K	110.0 M
39n+	1280x1024	16	75	80.0 K	135.0 M
3Ai	1280x1024	256	87	48.8 K	80.0 M
3An	1280x1024	256	60	65.0 K	110.0 M
3An+	1280x1024	256	75	80.0 K	135.0 M
40	320x200	32K	70	31.5 K	25.1 M
41	320x200	64K	70	31.5 K	25.1 M
42	320x200	16.8M	70	31.5 K	25.1 M
43	640x480	32K	60	31.5 K	25.1 M
43*	640x480	32K	72	37.9 K	31.5 M
43+	640x480	32K	75	37.5 K	31.5 M
43++	640x480	32K	85	43.4 K	36.0 M
44	640x480	64K	60	31.5 K	25.1 M
44*	640x480	64K	72	37.9 K	31.5 M
44+	640x480	64K	75	37.5 K	31.5 M
44++	640x480	64K	85	43.4 K	36.0 M
45	640x480	16.8M	60	31.5 K	25.1 M
45*	640x480	16.8M	72	37.9 K	31.5 M
45+	640x480	16.8M	75	37.5 K	31.5 M
45++	640x480	16.8M	85	43.4 K	36.0 M
46	800x600	32K	56	35.1 K	36.0 M
46*	800x600	32K	60	37.9 K	40.0 M
46+	800x600	32K	72	48.0 K	50.0 M
46#	800x600	32K	75	46.8 K	50.0 M
46##	800x600	32K	85	53.7 K	56.3 M
47	800x600	64K	56	35.1 K	36.0 M
47*	800x600	64K	60	37.9 K	40.0 M
47+	800x600	64K	72	48.0 K	50.0 M

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MODE	DISPLAY SIZE	COLORS SHADES	FRAME RATE.	H-SYNC.	VIDEO FREQ.
47#	800x600	64K	75	46.8 K	50.0 M
47##	800x600	64K	85	53.7 K	56.3 M
48	800x600	16.8M	56	35.1 K	36.0 M
48*	800x600	16.8M	60	37.9 K	40.0 M
48+	800x600	16.8M	72	48.0 K	50.0 M
48#	800x600	16.8M	75	46.8 K	50.0 M
48##	800x600	16.8M	85	53.7 K	56.3 M
49i	1024x768	32K	87	35.5 K	44.9 M
49n	1024x768	32K	60	48.4 K	65.0 M
49n+	1024x768	32K	70	56.5 K	75.0 M
49n#	1024x768	32K	75	60.2 K	80.0 M
49n##	1024x768	32K	85	68.7 K	94.5 M
4Ai	1024x768	64K	87	35.5 K	44.9 M
4An	1024x768	64K	60	48.4 K	65.0 M
4An+	1024x768	64K	70	56.5 K	75.0 M
4An#	1024x768	64K	75	60.2 K	80.0 M
4An##	1024x768	64K	85	68.7 K	94.5 M
4Bi	1024x768	16.8M	87	35.5 K	44.9 M
4Ci	1280x1024	32K	89	48.8 K	80.0 M
4Di	1280x1024	64K	89	48.8 K	80.0 M

NOTE: i - interlaced mode
       n - noninterlaced mode

For the limitation of memory bandwidth in 1MB DRAM configuration, the followin
video modes is not supported in 1MB configuration: modes 45* , 45+, 46+, 46#,
47+, and 47#.

7   Q & A

1. Why will the Novell Netware Server will hang when client is trying to login?
   Please remember to use Uninstall function to remove the SiS IDE DOS Driver
   after the SiS IDE Netware Driver installed.

2. How does one use 32-bit file access for Hard Disk and CD-ROM working at
   the same channel in WFW 3.11 environment?
   You should either put the devices in adifferent channel or turn the 32-bit file
   access off.

3. How does the DOS driver adjust the HD speed?
   The DOS Driver adjusts HD speed by parameters. For example, you can write
   the following line in config.sys "device=c:\siside\sisdr.sys/Rxxxx/Axxxx" where x
   could be 0 .. 9, A.. F for speed. R stands for recovery time and A stands for
   active time.

4. After an SiS IDE DOS driver is installed some Mode 4 hard disks will cause a
   system hang at the IDE driver loading procedure when the system is rebooted.
   Why does this occur?
   Users can avoid this by slowing the speed manually as described in question 3
   above.

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