

## Chapter 1

### INTRODUCTION

The MSI LPX SI15 mainboard is a high-performance personal computer mainboard based on the Pentium® processor. This mainboard supports Intel® Pentium® Pentium® with MMX™ Technology, Cyrix® 6x86/6x86L/6x86MX, AMD® K5/K6, and IDT C6™ processors.

The mainboard utilizes the SiS® 5597 chipset, which has Built-in VGA using UMA mode. In addition there is an on-chipset USB and IDE controller which supports IDE PIO/Bus master operation mode for IDE HDD/CD-ROM. The PIO mode supports Mode 0, 1, 2, 3 and 4, with a transfer rate up to 22 MB per/sec.

## **1.1 Mainboard Features**

### **CPU**

- Socket 7 supports Intel® Pentium®/Pentium® with MMX™ technology Processor
- The Cyrix® 6x86/6x86L/6x86MX ,AMD® K5/K6 and IDT C6™ processors are also supported.

### **Cache Memory**

- Supports 512K pipelined burst cache memory.
- Supports Direct Map Organization and Write-Back cache policy.

### **Chipset**

- SiS®5597 single chip BGA package with built-in VGA.
- Built-in 16Kb dirty SRAM.

### **Main Memory**

- Supports two 168-pin unbuffered DIMM sockets.
- Up to 128 MB main memory.
- Supports symmetric or asymmetric memory.
- Supports Fast Page (FP) Mode, Extended Data Output (EDO) Mode, and SDRAM.

### **Slots**

- Supports riser slot.
- Riser card supports one PCI and ISA slots or two ISA slots.
- Supports 3.3V PCI cards.

### **On-Board Peripherals**

- On-Board Peripherals include:
  - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
  - 2 serial ports (COM A & COM B).
  - 1 parallel port supports EPP/ECP mode.
  - 1 IrDA connector.

**On-Board IDE**

- An IDE controller on the SiS®5597 PCI Chipset provides IDE HDD/CD-ROM with PIO and Bus Master Operation Mode. The PIO Mode supports modes 0, 1, 2, 3 and 4 with a transfer rate of 22 Mbytes per second.
- Supports Multi-word DMA and Ultra DMA/33.
- Supports dual mode operation - Native & Compatibility mode.

**On-Board VGA**

- On-chip SiS®VGA.
- Supports UMA(Untied Memory Address) 0.5MB~4MB.

**Network**

- **Concerto I (PCB ver 1.X)**
  - Winbond W940 10M
  - Supports 10BASE-T/TX
- **Concerto II (PCB ver 2.X)**
  - Intel®558 100M chipset
  - 100BASE-T/TX LAN
  - Supports wake-up on LAN
  - 3K byte transmit and receiver FIFOs provide large on-chip storage of multiple transmit and receive frames

**Sound**

- ESS®1869 chip .
  - 3D audio effects.
  - 16 bit full-duplex stereo.
  - 16 bit address decode.
- Supports full duplex phonic mode.
- Three jack connectors: mic, line-in, and speaker.

**On-Board USB**

- Supports dual port USB(Universal Serial Bus).
-

**BIOS**

- The system board BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The system board provides a Desktop Management Interface(DMI) function which records your system board specifications.

**RTC**

- Non-Volatile RTC with 256 bytes of CMOS RAM.

**Keyboard Connector**

- PS/2<sup>®</sup> keyboard interface and PS/2<sup>®</sup> mouse interface.

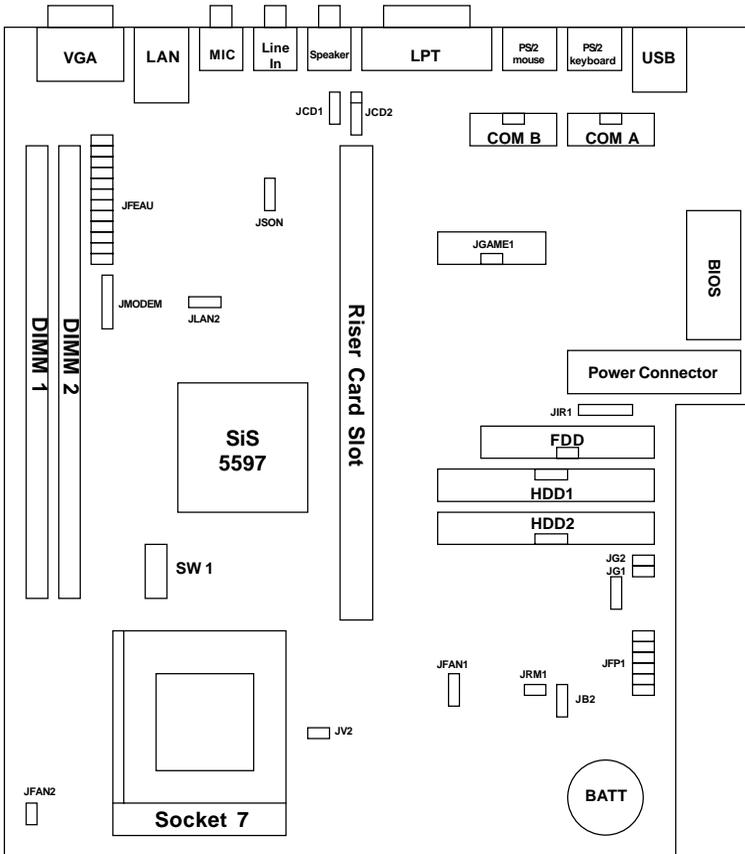
**Dimension**

- ALL-IN-ONE: 25cm(L) x 22.3cm(W) x 4 layer PCB.

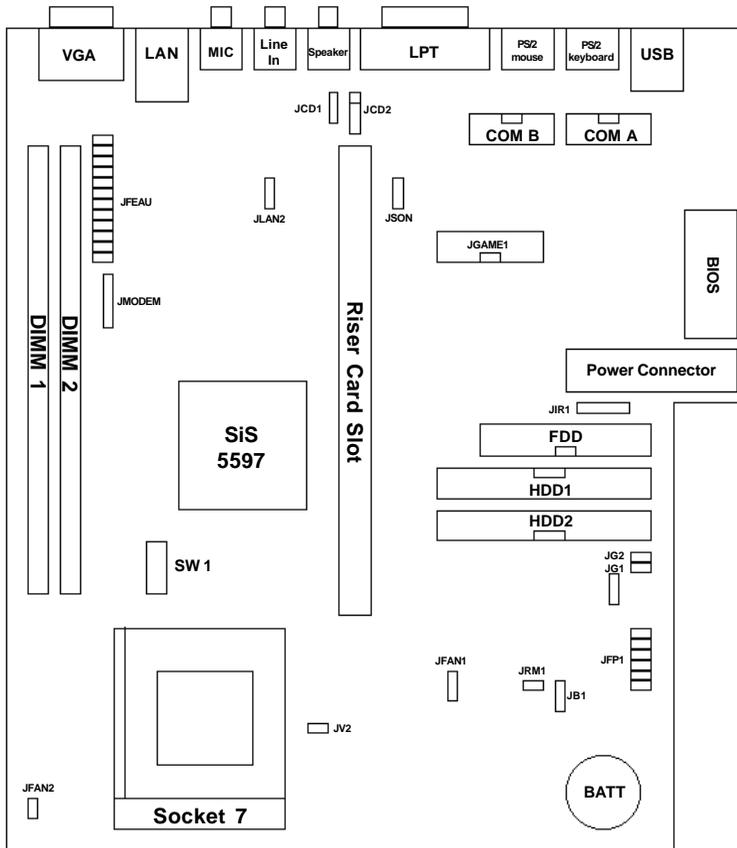
**Mounting**

- 6 mounting holes.

## 1.2 Mainboard Layout



**MS-5150 ver 1.X  
CONCERTO I**



**MS-5150 ver 2.X  
CONCERTO II**

## Chapter 2

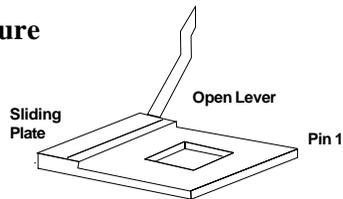
### Hardware Installation

#### 2.1 Central Processing Unit: CPU

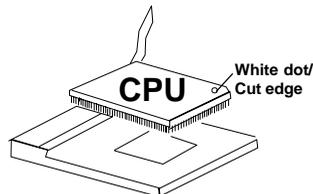
The **MSI LPX SI15** mainboard operates with **Intel® Pentium®/Pentium® with MMX™ technology**, **Cyrix® 6x86/6x86L/6x86MX**, **AMD® K5/K6** and **IDT C6™** processors. It could operate with 2.8V to 3.52V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation, a DIP switch (SW1) to set the proper speed for the CPU. The CPU should always have a cooling fan attached to prevent overheating.

##### 2.1-1 CPU Installation Procedure

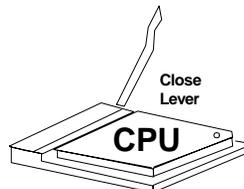
1. Pull the lever sideways away from the socket. Then raise the lever up to a 90-degree angle.



2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then insert the CPU. It should insert easily.



3. Press the lever down to complete the installation.

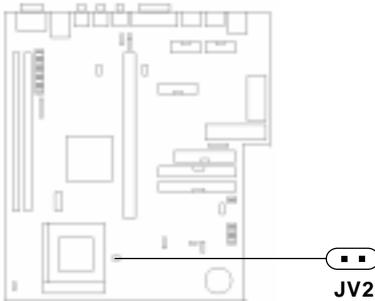




### 2.1-3 CPU Jumperless Voltage Setting: JV1(reserved)/JV2

This mainboard provides a jumperless voltage setting. The moment you change your CPU, the BIOS will auto-detect and enter BIOS Setup menu. Press “**F10**” or select “**Save and Exit**”. The system will reboot.

**JV2** is short, if you’re using an **Intel®Pentium®Overdrive®** processor.



### 2.1-4 CPU Speed Setting: SW1

To adjust the speed of the CPU, you must know the specification of your CPU (*always ask the vendor for CPU specification*). Then look at **Table 2.1 (Intel®Pentium®/Pentium® with MMX™ technology processor)**, **Table 2.2 (Cyrix®6x86/6x86L/6x86MX processor)**, **Table 2.3 (AMD®K5/K6 processor)** and **Table 2.4 (IDT C6™ processor)** for proper setting.

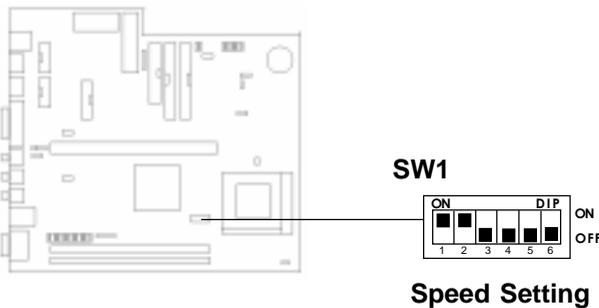


Table 2.1 Intel® Processor

Intel® Pentium® Processors

CPU Type	CPU Speed SW1
90MHz	
100MHz	
120MHz	
133MHz	
150MHz	
166MHz	
200MHz	

Intel® Pentium® Processors with MMX™ Technology

166MHz	
200MHz	
233MHz	

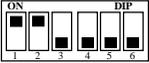
**Table 2.2 Cyrix® Processor**

Cyrix® processor uses PR to rate the speed of their processor based on Intel®Pentium®processor core speed. For example, P150 (120MHz) has 150MHz core speed of Intel®Pentium®processor but has 120MHz core speed in Cyrix®processor. Cyrix® processor should always uses a more powerful fan (ask vendor for proper cooling fan).

**Cyrix® 6x86 Processors**

CPU Type	CPU Speed SW1
PR166	
PR200	

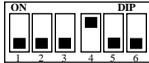
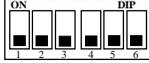
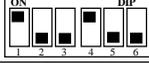
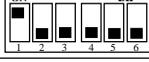
**Cyrix® 6x86MX Processors with MMX™ Technology  
(reserved)**

CPU Type	CPU Speed SW1
PR166 (60 x 2.5)	
PR200 (66 x 2.5)	
PR200 (75 x 2)	
PR233 (66 x 3)	
PR233 (75 x 2.5)	
PR266 (66 x 3.5)	
PR266 (75 x 3)	

**Table 2.3 AMD® Processor**

AMD® processor uses PR to rate the speed of there processor based on Intel®Pentium®processor core speed. For example, PR133 (100MHz) has 133MHz core speed of Intel®Pentium®processor but has 100MHz core speed in AMD® processor.

**AMD® K5 Processors**

CPU Type	CPU Speed SW1
PR90	
PR100	
PR120	
PR133	
PR150	
PR166	

**AMD® K6 Processors with MMX™ Technology**

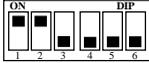
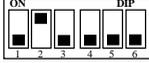
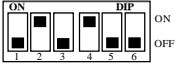
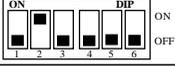
PR166 (166MHz)	
PR200 (200MHz)	
PR233 (233MHz)	
PR266 (266MHz)	

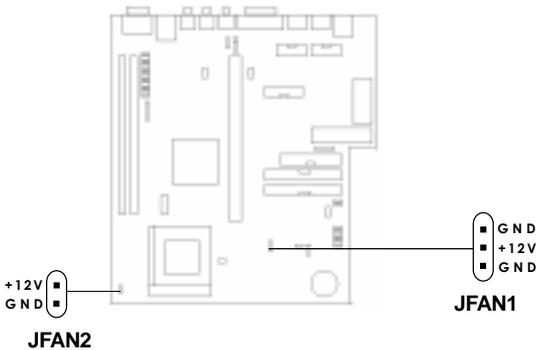
Table 2.4 IDT Processor

**IDT C6™ Processors**

CPU Type	CPU Speed SW1
150MHz	
180MHz	
200MHz	

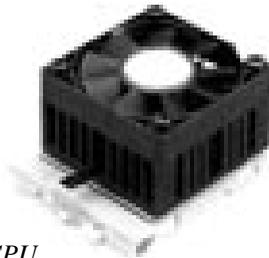
### 2.1-5 CPU Fan Connectors: JFAN1/JFAN2

These connectors support fan with +12V. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V pin. The black wire should be connected to GND. We recommend on using the JFAN2, for easy installation.



#### Recommended CPU cooling fan specification:

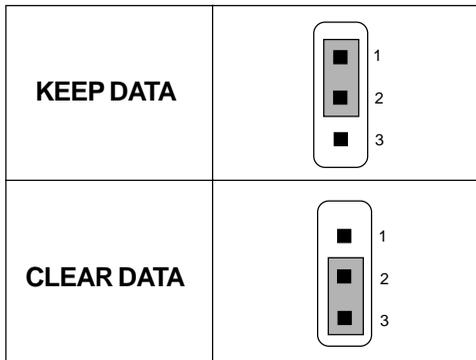
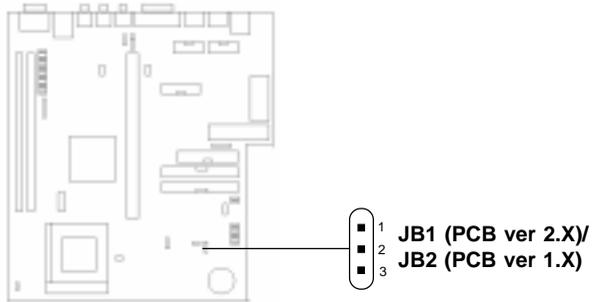
- Metallic Clip
- RPM 6000
- CFM 10
- +12V
- 52x52x10mm
- Ball Bearing
- Maximum HeatSink is 3cm.



**Note:** Always consult vendor for proper CPU cooling fan.

## 2.2 External Battery Connector: JB1/ JB2

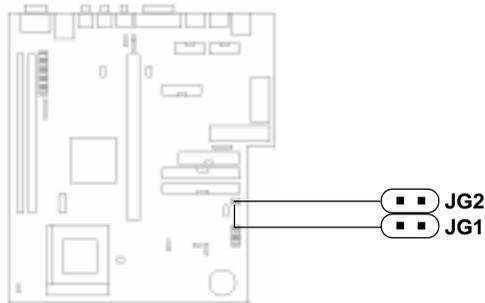
A battery must be used to retain the system board configuration in CMOS RAM. If you use the on-board battery, you must short pins of JB1 to keep the CMOS data.



## 2.3 Power Saving Switch Connector: JG1/ Power Saving LED Connector: JG2

Attach a power saving switch to JG1. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up. JG2 can be connected with LED to monitor the JG1.

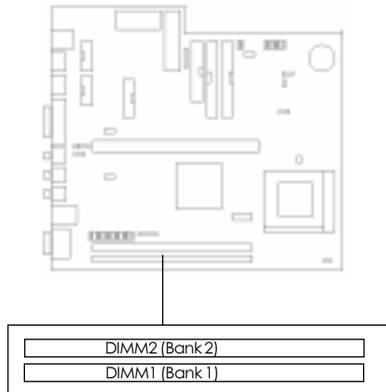
When you use an ATX power supply, shorting JG1 more than 4 sec will turn off the system.



## 2.4 Memory Installation

### 2.4-1 Memory Bank Configuration

The mainboard provides two 168-pin unbuffered DIMM(Double In-Line Memory) sockets to support a maximum of 128MB memory. You can use DIMM from 8MB, 16MB, 32MB, to 64MB.

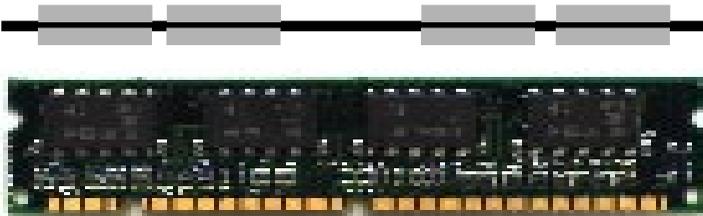


## 2.4-2 Memory Installation Procedures

### A. How to install a DIMM Module

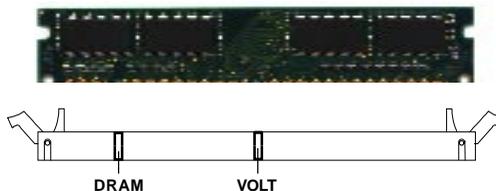


**Single Sided DIMM**



**Double Sided DIMM**

1. The DIMM slot has a two Notch Key called “VOLT and DRAM”, so the DIMM memory module can only fit in one direction.
2. Insert the DIMM memory module vertically into the DIMM slot. Then, push it in.



3. This will automatically close the plastic clip at the side of the DIMM slot.

### 2.4-3 Memory Population Rule

1. You can only use a 3.3v EDO and SDRAM DIMM.
2. You can only used an unbuffered DIMM.
3. To operate properly, at least one 168-pin DIMM module must be installed.
4. DIMM1 must be populated first.
5. You can mixed EDO and SDRAM.
6. The DRAM addressing and the size supported by the mainboard is shown below.

#### Memory Mapping Options

DRAM Tech.	Memory Org.	Addressing	Address Size	MB/DIMM	
				Single Side	Double Side
4M	1M x 4	Symmetric	10 x 10	8MB	16MB
16M	1M x 16	Symmetric	10 x 10	8MB	16MB
	2M x 8	Asymmetric	11 x 10	16MB	32MB
	4M x 4	Symmetric	11 x 11	32MB	64MB
64M	4M x 16	Symmetric	11 x 11	32MB	64MB
	8M x 8	Asymmetric	12 x 11	64MB	-

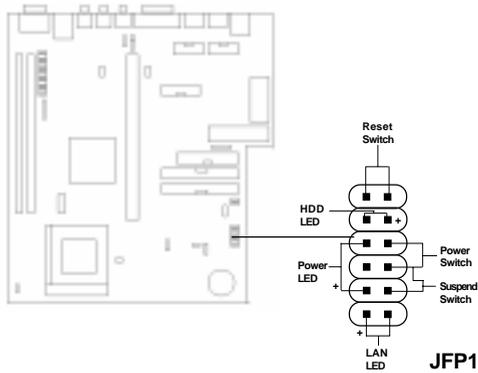


**WARNING!**

There are some SDRAM DIMM's that will not function properly with this mainboard. Please refer to Chapter 8: Memory Compatibility Test for more information.

### 2.5 Case Connector: JFP1

The Reset Switch, Power Switch, Power LED, Suspend Switch, LAN LED, and HDD LED all are connected to the JFP1 connector block.



### **2.5-1 Reset Switch**

Reset switch are used to reboot the system rather than turning the power ON/OFF. You can connect the Reset switch from the system case to this pin. But avoid rebooting while the HDD LED is lit.

### **2.5-2 Power LED**

The Power LED is always lit while the system power is on. You can connect the Power LED from the system case to this pin.

### **2.5-3 Power Switch**

If you are using an ATX power supply, this will allow you to turn the system from on to off and vice-versa. This connector have the same function with JRM1.

### **2.5-4 Suspend Switch**

The Suspend Switch can be set in the BIOS Power Management Setup. When used as a Suspend Switch, this allows the user to suspend the system when not in use. It also has the same function as JG1.

### **2.5-5 HDD LED**

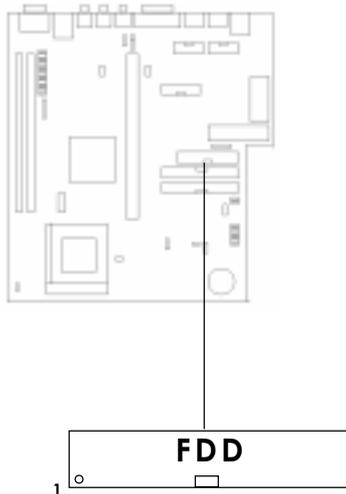
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

### **2.5-6 LAN LED**

LAN LED will shows any activity on your network.

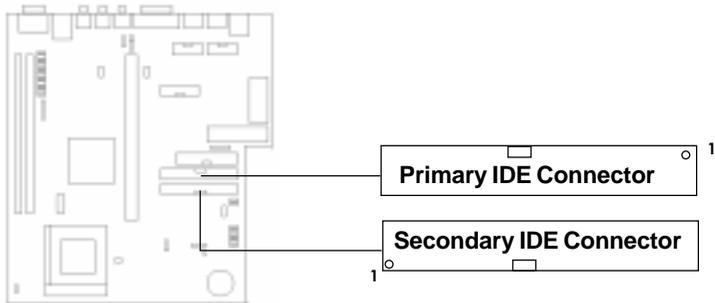
## 2.6 Floppy Disk Connector: FDD

The mainboard also provides a standard floppy disk connector FDD that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.



## 2.7 Hard Disk Connector: HDD1 & HDD2

The mainboard has a 32-bit Enhanced PCI IDE Controller that supports PIO mode 4 and Ultra DMA33 speed. It has two HDD connectors, HDD1 (primary) and HDD2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to HDD1 and HDD2.



### **HDD1**(primary IDE connector)

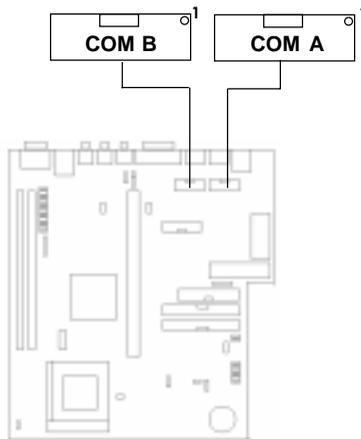
The first hard disk should always be connected to HDD1. HDD1 can connect a Master and a Slave drive.

### **HDD2**(secondary IDE connector)

HDD2 can also connect a Master and a Slave drive.

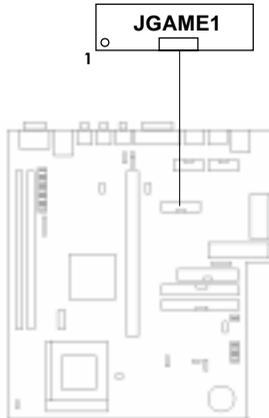
## 2.8 Serial Port Connectors: COM A & COM B

The mainboard has two serial ports COM A and COM B. These two ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into these connectors.



## 2.9 MIDI/Joystick Connector: JGAME1

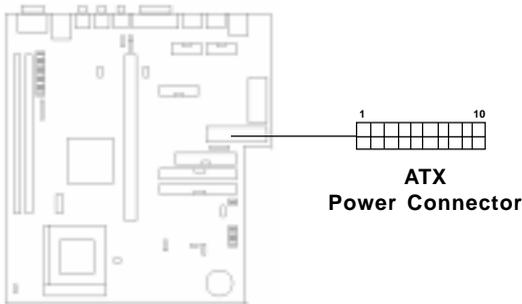
The mainboard provided a MIDI/Joystick connector for connecting the joystick port.



## 2.10 Power Supply

### 2.10-1 ATX 20-pin Power Connector: JATX1

This type of connector already supports the remote ON/OFF function. However, you need to connect the **Remote Power On/OFF switch (JRM1)**.

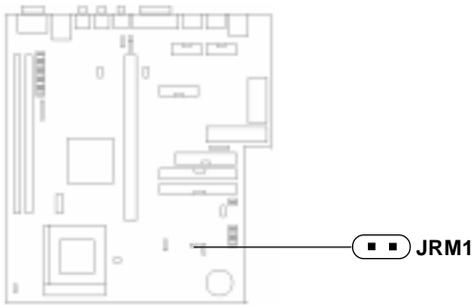


### ATX Power Connector Pin Description

20	19	18	17	16	15	14	13	12	11
5V	5V	-5V	GND	GND	GND	PS_ON	GND	-12V	3.3V
12V	5V_SB	PW_OK	GND	5V	GND	5V	GND	3.3V	3.3V
10	9	8	7	6	5	4	3	2	1

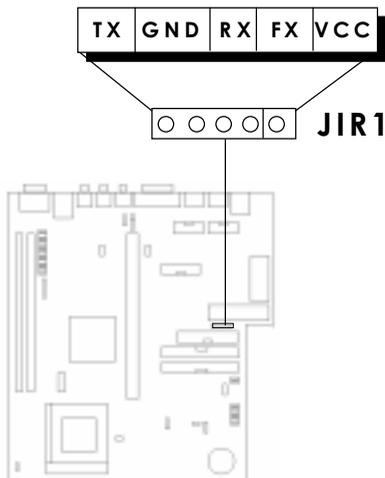
### 2.10-2 ATX Power On/Off Switch: JRM1

Connect to a 2-pin push button switch. Every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON or vice-versa.



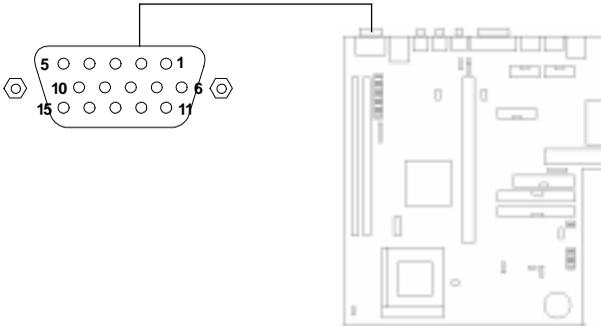
## 2.11 IrDA Infrared Module Connector: JIR1

The mainboard provides 5-pin infrared (IR) connectors for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup.



## 2.12 VGA DB 15 Pin Connector

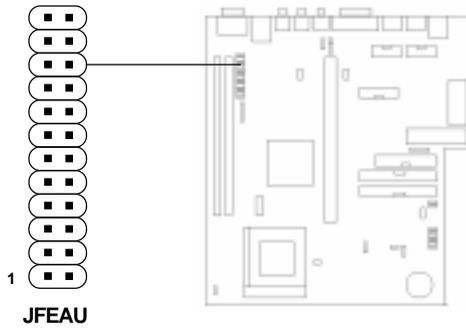
The mainboard provides a DB 15-pin connector to connect to a VGA monitor.



Analog Video Display Connector(DB15-S)	
Pin	Signal Description
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

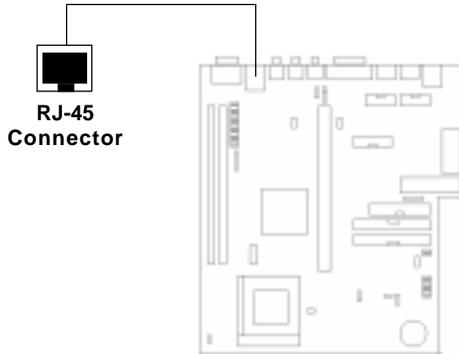
### 2.13 VGA Feature Connector: JFEAU

This is a standard 26-pin VGA feature connector use for TV-Tuner card and MPEG card.



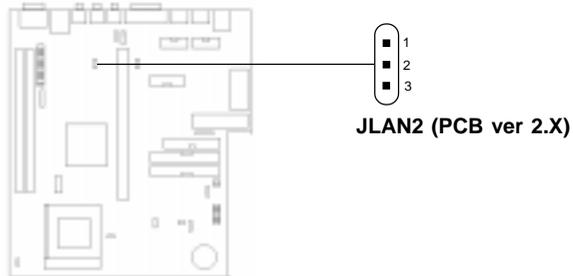
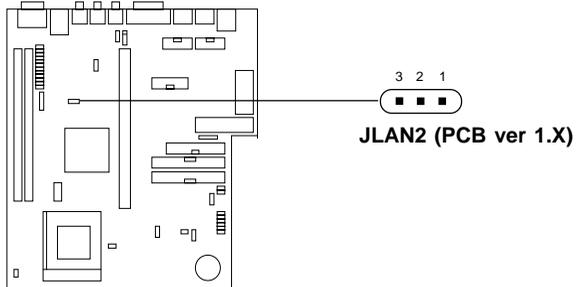
## 2.14 LAN Connector

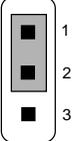
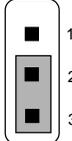
The mainboard provides a RJ-45 connector for your network need.



## 2.15 LAN Feature Connector: JLAN2

This connector is used to Enable/Disable the on-board LAN chip.

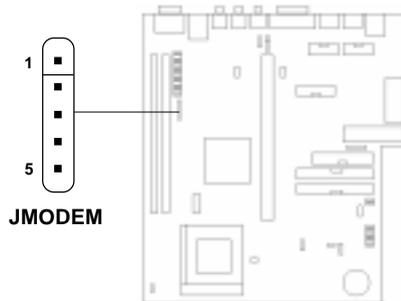


<b>ENABLED</b>	 <p>1 2 3</p>
<b>DISABLED</b>	 <p>1 2 3</p>

**Note:** Short pin 1-2, to enable the LAN.  
Short pin 2-3, to disable the LAN.

## 2.16 Modem Wake Up Connector: JMODEM

The JMODEM connector is for use with Modem add-on card that supports the Modem Wake Up function.

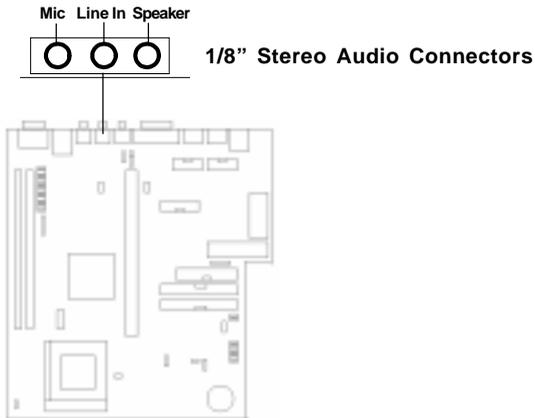


PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

**Note:** Modem wake-up signal is active “low”.

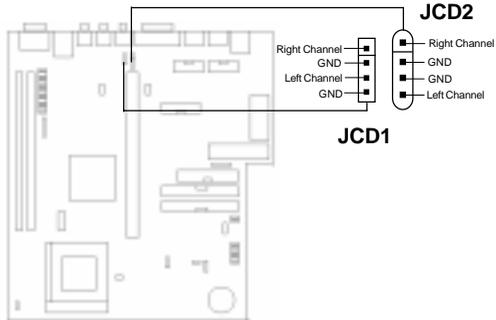
## 2.17 Audio Port Connectors

**Speaker** is a connector for Speaker or Headphone. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is used for connecting microphone.



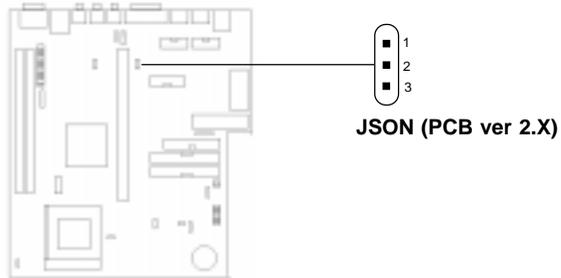
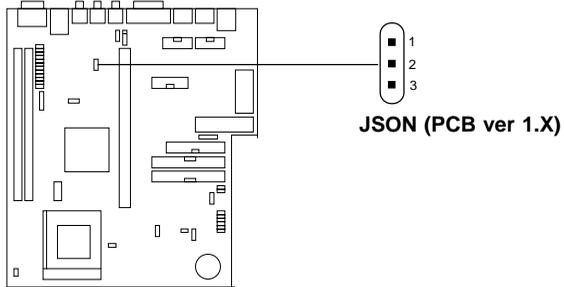
## 2.18 CD Audio Connectors: JCD1 & JCD2

This can be connected to the audio cable provided by the CD-ROM.



### 2.19 Audio Feature Connector: JSON

This connector is used to Enable/Disable the on-board audio chip.

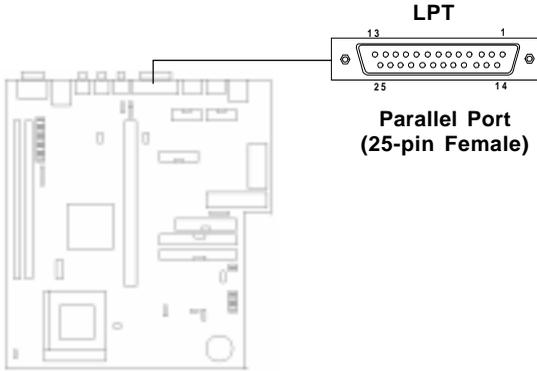


<b>ENABLED</b>	
<b>DISABLED</b>	

**Note:** Short pin 1-2, to enable the audio function.  
Short pin 2-3, to disable the audio function.

## 2.20 Parallel Port Connector: LPT

The mainboard provides a connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP).

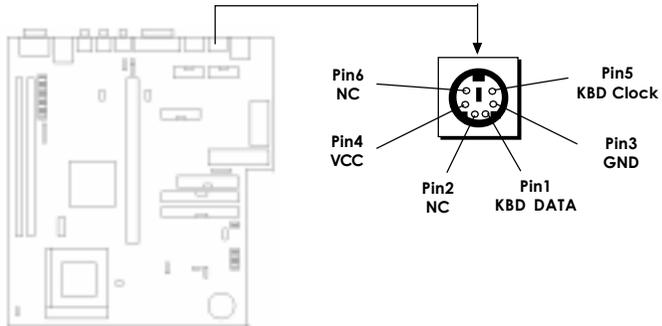


### PIN DEFINITION

PIN #	DEFINITION	PIN #	DEFINITION
1	STROBE	14	AUTO FEED#
2	DATA0	15	ERR#
3	DATA1	16	INIT#
4	DATA2	17	SLIN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT		

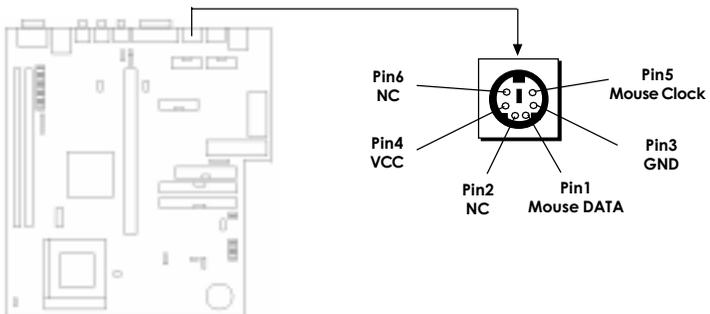
### 2.21 Keyboard Connector: JS2KB

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



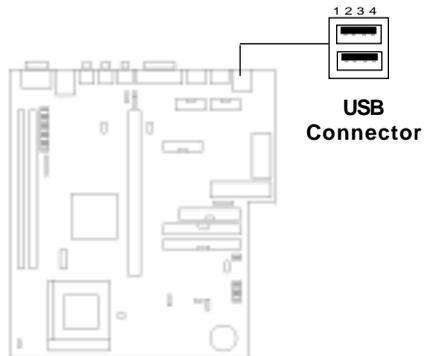
### 2.22 Mouse Connector: JS2MS

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:



## 2.23 USB Connector: USB

The mainboard provides a **USB(Universal Serial Bus)** connector for attaching a keyboard, mouse or other USB devices. You can plug it directly to this connector.



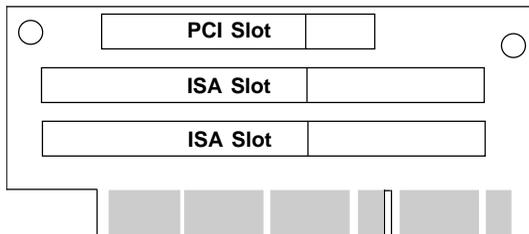
<b>PIN1:</b>	<b>VCC</b>
<b>PIN2:</b>	<b>DATA-</b>
<b>PIN3:</b>	<b>DATA+</b>
<b>PIN4:</b>	<b>GND</b>

### 2.24 Riser Card Slot: EISA1

The mainboard provides a riser card slot to install the MS-5926 riser card. The MS-5926 riser card provides one PCI/one ISA or two ISA slot. The PCI slot supports 3.3v add-on card.



#### **MS-5926**



**EISA1(Riser Card Slot)**

**MS-5201**

# Chassis Installation Guide

VERSION 1.0  
1997/08/13 ROC



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3. Installation procedure .....	1-2
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## **MS-5201 Chassis Installation Guide**

### **1. Overview**

The MS-5201 is a specially design chassis for MS-5150 mainboard. The chassis can accomodate one Floppy drive, Hard drive, and CD-ROM. It also provide one security lock , for protecting system. The chassis back panel support one VGA, Network(UTP), Speaker, Line-in, Mic, LPT, PS/2® mouse and keyboard, Dual USB Port.

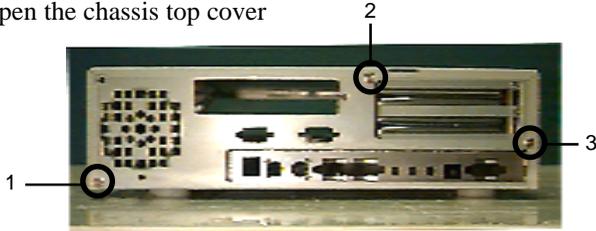
### **2. Installation Tools**

Tools you need before you start:

- screw driver (phillips cross head type)
- long nose plier
- anti-static wrist strap or glove
- user' s guide.

### 3. Installation Procedure

**Step 1:** Open the chassis top cover



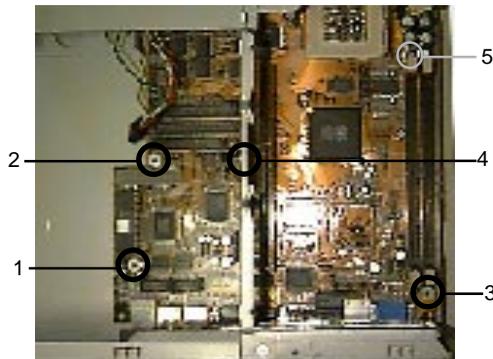
Unscrew these three screws, at the back of the chassis. Then pull the top cover toward yourself.

**Note:** If there's a power supply inside the chassis, you need to remove it first.

**Step 2:** Stick four rubber stand at the bottom of the chassis.

**Step 3:** Mainboard

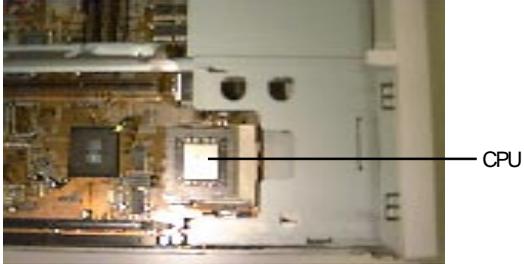
Slide the MS-5150 mainboard into the chassis from the right. Check for a perfect fit by pushing it toward the chassis' back panel. Secure the mainboard with screws.



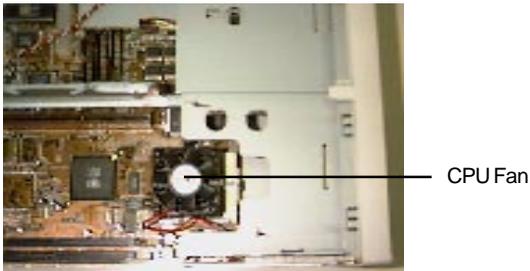
For the 5<sup>th</sup> mounting hole, add a non-conducting washer above and another one below the board before adding a screw.

---

**Step 4:** Install CPU



**Step 5:** Install CPU Fan

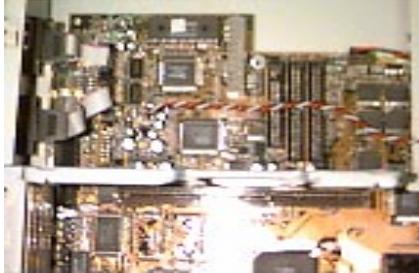


**Step 6:** Insert DIMM Module.

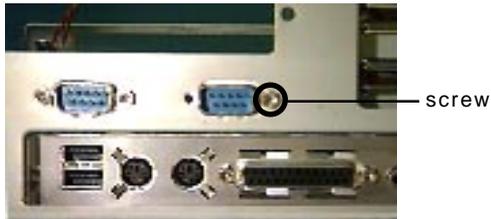


If you have only 1 DIMM module, insert it into the first DIMM slot.

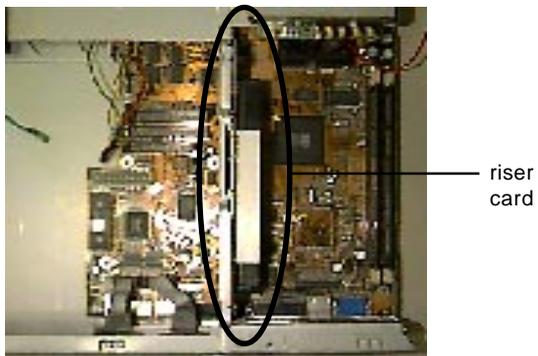
**Step 7:** Plug-in the cables for COM A and COM B and the CD-ROM audio cable.



Use a long nose plier to screw the COM port connectors on the back panel.



**Step 8:** Insert the MS-5296 in the riser card slot in the middle of the mainboard.

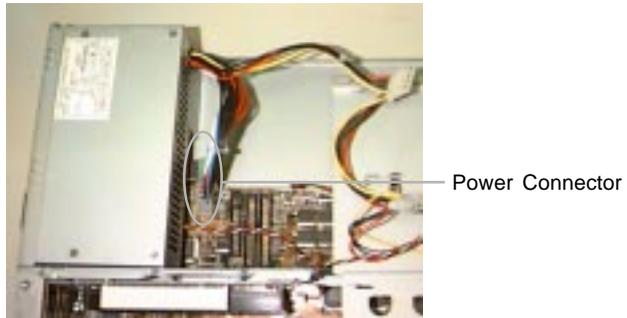




Secure the MS-5296 riser card into the Chassis with screws.

**Step 9: Power Supply**

Put back the power supply and plug-in the power connector onto the mainboard.



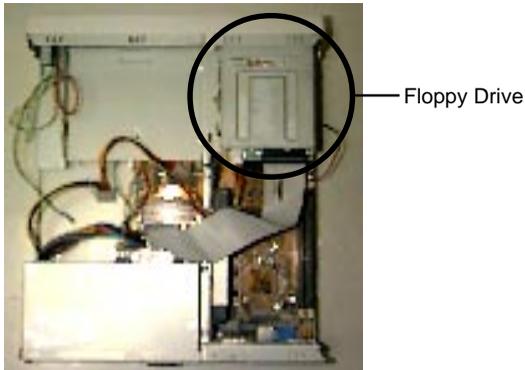
Secure the power supply into the chassis with 3 screws indicated below.



**Step 10:** Plug in the case connector into the mainboard.  
(refer to MS-5150 user's guide)

**Step 11:** 3.5" Floppy Drive

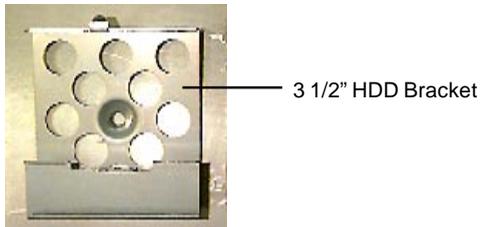
- Insert the floppy drive into the floppy drive bracket from the front panel.
- Secure the floppy drive into the bracket with 4 screws -- 2 on each side.
- Connect the 34-pin floppy cable from the floppy drive into the mainboard FDD port. Pin 1 is indicated by red line on the cable.
- Insert the 4-pin power connector from the power supply into the floppy drive power socket.



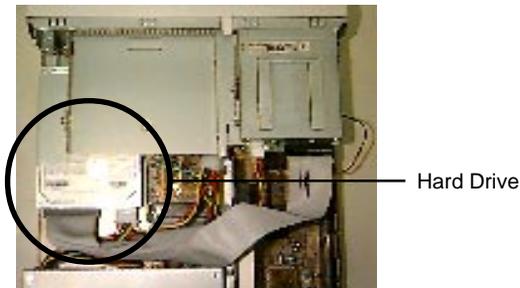
**Step 12: Hard Drive**



Remove the 3 1/2" HDD Bracket by removing the above screw.

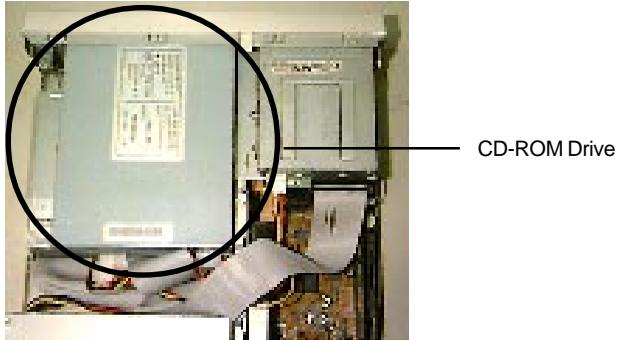


Secure the hard disk into the 3 1/2" HDD Bracket with 4 screws -- 2 on each side.



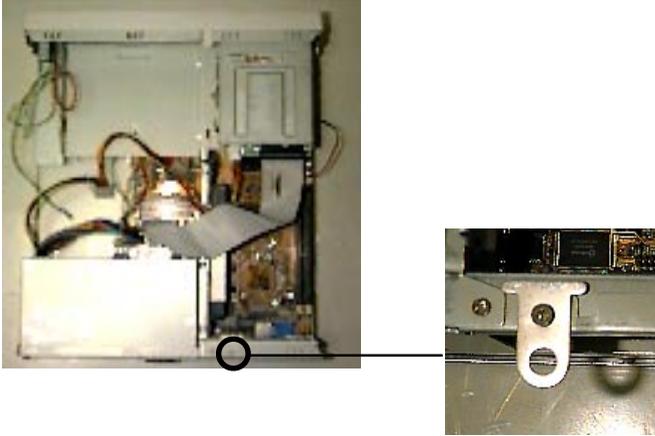
- Secure the 3 1/2" HDD Bracket into the chassis with screw.
- Connect the 40-pin IDE cable from the hard drive into the mainboard's primary IDE connector. Pin 1 is indicated by red mark on the cable.
- Insert the 4-pin power connector from the power supply into the hard drive power socket.

**Step 13: CD-ROM Drive**



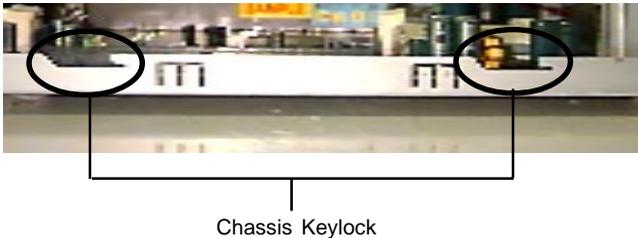
- Secure the CD-ROM into the proper bracket with 2 screws on each side.
- Connect the 40-pin IDE cable from the CD-ROM drive into the mainboard secondary IDE connector. Pin 1 is indicated by red wire on the cable.
- Connect the CD-ROM audio cable from the mainboard into the CD-ROM audio socket.
- Insert the 4-pin power connector from the power supply into the CD-ROM power socket.

**Step 14:** Install the optional Case Lock.



Secure the optional case lock into the chassis.

**Step 15:** Close the Case.



- There are three keylock on the side of the case, so you need to slide the chassis cover.
- Secure the chassis cover with screws.



The installation is now completed.

## 4. How to Upgrade CPU

**Step 1:** Unscrew the Floppy Disk Drive and CD-ROM Drive and move half way out of the front panel.



**Step 2:** Remove CPU Fan, change CPU, and install back CPU fan.

**Step 3:** Put back the Floppy drive and the CD-ROM Drive and secure them with screws.

## **Chapter 4**

### **AWARD® BIOS SETUP**

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

## 4.1 Entering Setup

Power on the computer and press <Del> or <Ctrl><Alt><Esc> keys immediately to allow you to enter Setup.

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

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

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

## 4.2 Getting Help

### Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

### 4.3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

ROM PCI/ISA BIOS (2A59IM4A)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	SPECIAL FEATURES SETUP
BIOS FEATURES SETUP	INTEGRATED PERIPHERALS
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGEMENT SETUP	USER PASSWORD
PNP/PCI CONFIGURATION	IDE HDD AUTO DETECTION
LOAD SETUP DEFAULTS	SAVE & EXIT SETUP
	EXIT WITHOUT SAVING
Esc : Quit	
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type...	

**Standard CMOS Setup**

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

**BIOS Features Setup**

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

**Chipset Features Setup**

This setup page includes all the items of chipset special features.

**Power Management Setup**

This category determines the power consumption for system after setting the specified items. Default value is Disable.

**PNP/PCI Configuration Setup**

This category specifies the IRQ level for PCI and ISA devices.

**Load Setup Defaults**

Chipset defaults indicates the values required by the system for the maximum performance.

**Special Features Setup**

This functions is reserved for system special function.

**Integrated Peripherals**

This category specifies the I/O used by your system.

**Supervisor Password/User Password**

Change set or disable password. This function allows the user access to the system and setup or just setup.

**IDE HDD Auto Detection**

Automatically configure hard disk parameters.

**Save & Exit Setup**

Save CMOS value changes to CMOS and exit setup.

**Exit Without Saving**

Abandon all CMOS value changes and exit setup.

## 4.4 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

ROM PCI/ISA BIOS (2A59IM4A)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date(mm:dd:yy): Mon, August 25,1997							
Time(hh:mm:ss): 00:00:00							
HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTOR MODE
Primary Master:	Auto	0	0	0	0	0	AUTO
Primary Slave :	Auto	0	0	0	0	0	AUTO
Secondary Master :	Auto	0	0	0	0	0	AUTO
Secondary Slave :	Auto	0	0	0	0	0	AUTO
Drive A :	1.44M,3.5in.						
Drive B :	None						
Video :	EGA/VGA						
Halt On :	All, but Keyboard						
					Base Memory: 640K		
					Extended Base Memory:15360K		
					Other Memory: 384K		
					Total Memory: 16384K		
ESC : Quit	↑↓→← : Select Item		PU/PD/+/- : Modify				
F1 : Help	(Shift)F2 : Change Color						

**Date**

The date format is <day><month> <date> <year>.

<b>Day</b>	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
<b>month</b>	The month from Jan. through Dec.
<b>date</b>	The date from 1 to 31 can be keyed by numeric function keys.
<b>year</b>	The year, depends on the year of the BIOS

**Time**

The time format is <hour> <minute> <second>.

**PrimaryMaster/PrimarySlave  
SecondaryMaster/Secondary Slave**

These categories identify the types of 2 channels that have been installed in the computer. There are 45 pre-defined types and 4 user definable types for Enhanced IDE BIOS. Type 1 to Type 45 are pre-defined. Type User is user-definable.

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

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

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 the controller of HDD interface is CD-ROM, the selection shall be  
“None”.

<b>CYLS.</b>	number of cylinders
<b>HEADS</b>	number of heads
<b>PRECOMP</b>	write precom
<b>LANDZONE</b>	landing zone
<b>SECTORS</b>	number of sectors
<b>MODE HDD</b>	access mode

## 4.5 BIOS Features Setup

ROM PCI/ISA BIOS (2A59IM4A)  
 BIOS FEATURES SETUP  
 AWARD SOFTWARE, INC.

Virus Warning	: Disabled	
CPU Internal Cache	: Enabled	
External Cache	: Enabled	
Quick Power on Self Test	: Disabled	
Boot ROM for Onboard LAN	: Disabled	
Boot Sequence	: A,C,SCSI	
Swap Floppy Drive	: Disabled	
Boot Up Floppy Seek	: Enabled	
Floppy FIFO Control	: Enabled	
Boot up NumLock status	: On	
Security Option	: Setup	
PCI/VGA palette snoop	: Disabled	
OS select for DRAM>64MB	: Non-OS2	
Report No FDD for WIN95	: Yes	
		Esc : Quit    ↑↓←→ : Select item
		F1 : Help PU/PD/+/- : modify
		F5 : Old Value(Shift) F2 : Color
		F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

### Virus Warning

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear. For the meantime, you can run an anti-virus program to locate the problem.

<p><b>!WARNING!</b></p> <p>Disk Boot Sector is to be modified</p> <p>Type "Y" to accept write or "N" to abort write</p> <p>Award Software, Inc.</p>
---

**Disabled** (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

**Enabled** Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

**Note:** *This function is available only for DOS and other OS that do not trap INT13.*

### CPU Internal Cache

The default value is Enabled. If your CPU is without Internal Cache then this item “CPU Internal Cache” will not be shown.

**Enabled** (default) Enable cache

**Disabled** Disable cache

**Note:** The internal cache is built-in the processor.

### CPU External Cache

Choose Enabled or Disabled. This option enables the level 2 cache memory.

### Quick Power On Self Test

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

**Enabled** Enable quick POST

**Disabled** (default) Normal POST

### Boot ROM for Onboard LAN

When this option is enabled, the system will try to boot from the LAN boot ROM. If it cannot boot from there, only then will it search from the drives indicated in the Boot Sequence.

---

### **Boot Sequence**

This category determines which drive the computer searches first for the disk operating system (i.e., DOS). The settings are A,C,SCSI/C,A,SCSI/C,CD-ROM,A/CD-ROM,C,A/D,A,SCSI/E,A,SCSI/F,A,SCSI/SCSI,A,C/SCSI,C,A/C only. Default value is A,C,SCSI.

### **Swap Floppy Drive**

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

### **Boot Up Floppy Seek**

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M are all 80 tracks.

**Enabled**(default) BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.

**Disabled** BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

### **Floppy FIFO Control**

During Enabled, the FDD disk will perform better.

### **Boot Up NumLock Status**

The default value is On.

**On** (default) Keypad is numeric keys.

**Off** Keypad is arrow keys.

## Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

<b>System</b>	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
<b>Setup(default)</b>	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

## PCI VGA Palette Snooping

Choose Disabled or Enabled. Some graphic controllers which are not VGA compatible, take the output from a VGA controller and map it to their display as a way to provide the boot information and the VGA compatibility.

However, the color information coming from the VGA controller is drawn from the palette table inside the VGA controller to generate the proper colors, and the graphic controller needs to know what is in the palette of the VGA controller. To do this, the non-VGA graphic controller watches for the Write access to the VGA palette and registers the snoop data. In PCI based systems, where the VGA controller is on the PCI bus and a non-VGA graphic controller is on an ISA bus, the Write Access to the palette will not show up on the ISA bus if the PCI VGA controller responds to the Writes.

In this case, the PCI VGA controller should not respond to the Write. It should only snoop the data and permit the access to be forwarded to the ISA bus. The non-VGA ISA graphic controller can then snoop the data on the ISA bus. Unless you have the above situation, you should disable this option.

<b>Disabled</b> (default)	Disables the function
<b>Enabled</b>	Enables the function

**OS Selection for DRAM > 64MB**

Allows OS2® to be used with > 64 MB of DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

**Report No FDD For WIN95**

When set to yes, BIOS will not report any IRQ for FDD when FDD is disabled in Windows®95. This function is only used when you are testing SCT for Windows®95 Logo.

### 4.6 Chipset Features Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for you system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

**ROM PCI/ISA BIOS (2A59IM4A)  
CHIPSET FEATURE SETUP  
AWARD SOFTWARE, INC.**

<pre>Auto Configuration           :Disabled L2 (WB) Tag Bit Length      :8bits SRAM Back-to-Back           :Enabled Starting Point of Paging    :4T Refresh Cycle Time (us)     :62.4 RAS Pulse Width Refresh     :4T RAS Precharge Time          :4T RAS to CAS Delay            :4T CAS# Pulse Width (FP)       :2T CAS# Pulse Width (EDO)     :2T RAMW# Assertion Timing     :3T CAS Precharge Time (EDO)   :1T/2T CAS Precharge Time (FP)    :1T/2T SDRAM CAS Latency           :3T SDRAM WR Retire Rate        :X-2-2-2 SDRAM Wait State Control    :1WS Enhanced Memory Write       :Disabled Read Prefetch Memory RD     :Enabled CPU to PCI Post Write       :3T</pre>	<pre>CPU to PCI Burst Mem. WR   :Disabled Memory Hole at 15M-16M    :Disabled VGA Shared Memory Size     :1MB VGA Memory Clock (MHz)    :55</pre>
<pre>Esc : Quit      ↑↓←→ : Select item F1  : Help PU/PD/+/- : modify F5  : Old Value(Shift) F2 : Color F6  : Load BIOS Defaults F7  : Load Setup Defaults</pre>	

### **Auto Configuration**

This item allows you to select pre-determined optimal values of chipset parameters. When Disabled, Chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled. The settings are Enabled or Disabled.

**Note:** When this item is enabled, the pre-defined items will become SHOW-ONLY.

### **L2 (WB) Tag Bit Length**

Not all SRAM supports 8 tag bits. The mainboard designer should select the installed cache SRAM. If this field is set to 8 tag bits and the system reports cache memory errors, try setting the field to 7 bits. The settings are 7 bits or 8 bits.

### **SRAM Back-to-Back**

This item allows you to enable/disable SRAM Back-to-Back. A single burst cycle timing is 3-1-1-1. SRAM Back to Back is for 2 consecutive cycles timing: 3-1-1-1-1-1-1-1. The settings are Enabled or Disabled.

### **Starting Point of Paging**

This item allows you to select the "Starting Point of Paging" function cycle of DRAM. The settings are 1T, 2T, 4T, or 8T.

### **Refresh Cycle Time(us)**

DRAM needs data refresh otherwise the data will be lost. The normal refresh rate is 15.6us. However the progress of DRAM technology makes the DRAM be able to suffer longer refresh time, 15.6 x 1, 15.6 x 2, 15.6 x 3. The settings are 15.6, 62.4, 124.8, or 187.2.

### **RAS Pulse Width Refresh**

Select the number of CPU clock cycles for RAS DRAM refresh. Fewer clock cycles give faster performance, and more cycles give more stable performance. The settings are 4T, 5T, 6T, or 7T.

**RAS Precharge Time**

Defines the length of time for Row Address Strobe is allowed to precharge. The settings are 2T, 3T, 4T, or 5T.

**RAS to CAS Delay**

This sets the relative delay between the row and column address strobes. The settings are 2T, 3T, 4T, or 5T.

**CAS # Pulse Width (FP)**

Determines the number of CPU clock cycles allocated for the CAS to accumulate its charge before Fast Page mode DRAM is allowed to precharge. If insufficient time is allowed, refresh may be incomplete and data lost. The settings are 2T or 1T.

**CAS # Pulse Width (EDO)**

Determines number of CPU clock cycles the CAS signal pulses during EDO DRAM reads and writes, when memory is not interleaved. The settings are 2T or 1T.

**RAMW# Assertion Timing**

This item allows you to select the RAMW# assertion timing. RAMW# is internal DRAM control signal of chipset. The settings are 3T or 2T.

**CAS Precharge Time (FP)**

This item allows you to select CAS precharge time for FP RAM. The settings are 1T, 1T/2T, or 2T.

**CAS Precharge Time (EDO)**

This item allows you to select CAS precharge time for EDO RAM. The settings are 1T, 1T/2T, or 2T.

**SDRAM CAS Latency**

This item allows you to select the SDRAM Latency Time. The settings are 2T or 3T.

**SDRAM WR Retire Rate**

Chipset has a post write buffer. The buffer will store the data of all CPU write cycle first, and then forward the data to DRAM. "retire rate" is the speed of buffer to DRAM. The settings are X-1-1-1 or X-2-2-2.

**SDRAM Wait State Control**

This item allows you to select SDRAM wait state control function during Precharge command. The settings are 1WS or 0WS.

**Enhanced Memory Write**

This item allows you to enable/disable the enhanced memory write. This function must disable if using 512K cache size and TAG address is set to 8 bits. The settings are Enabled or Disabled.

**Read Prefetch Memory RD**

Chipset has a prefetch buffer. It will prefetch the DRAM data of next address in buffer. Then when next necessary hits this address, CPU can get the data from this buffer instead of DRAM. It will shorten this cycle time. The settings are Enabled or Disabled.

**CPU to PCI Post Write**

Select enabled to use a fast buffer for posting writes to memory. Using a fast buffer releases the CPU before completion of a write cycle to DRAM.

**CPU to PCI Burst Mem. WR**

Select enabled permits PCI burst memory write cycles, for faster performance. When disabled, performance is slightly slower, but more reliable. The settings are 3T or 2T.

### **Memory Hole at 15M-16M**

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved it can be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

### **VGA Shared Memory Size**

This item allows you to select the VGA Shared Memory Size. The settings are 0.5MB, 1MB, 1.5MB, 2MB, 2.5MB, 3MB, 3.5MB, or 4MB.

### **VGA Memory Clock (MHz)**

This item allows you to select the VGA Memory Clock (MHz). The settings are 40-70.

## 4.7 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ROM PCI/ISA BIOS (2A5IISZ9)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

Power Management	: Disable	IRQ3 (COM 2)	: Enabled
PM Control by APM	: No	IRQ4 (COM 1)	: Enabled
Video Off Option	: Susp,Stby Off	IRQ5 (LPT 2)	: Enabled
Video Off Method	: V/H SYNC+Blank	IRQ6 (Floppy Disk)	: Enabled
		IRQ7 (LPT 1)	: Enabled
Doze Speed(div by)	: 2	IRQ8 (RTC Alarm)	: Enabled
Stdby Speed(div by)	: 3	IRQ9 (IRQ2 Redir)	: Enabled
Modem Use IRQ	: 3	IRQ10 (Reserved)	: Enabled
		IRQ11 (Reseerved)	: Enabled
** PM Timers **		IRQ12 (PS/2 Mouse)	: Enabled
HDD Off After	: 14 Min	IRQ13 (Coprocesor)	: Enabled
Doze Mode	: Disable	IRQ14 (Hard Disk)	: Enabled
Standby Mode	: Disable	IRQ15 (Reserved)	: Enabled
Suspend Mode	: Disable		
** PM Events **			
COM Ports Activity	: Disabled	Esc : Quit	↑↓←→: Select item
LPT Ports Activity	: Disabled	F1 : Help PU/PD/+/-	: modify
HDD Ports Activity	: Disabled	F5 : Old Value(Shift)	F2 : Color
VGA Activity	: Disalbed	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

## Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. Doze Mode
2. Standby Mode
3. Suspend Mode
4. HDD Power Down

There are four selections for Power Management, three of which have fixed mode settings.

<b>Disable</b> (default)	No power management. Disables all four modes.
<b>Min. Power Saving</b>	Minimum power management. Doze Mode = 20 min., Standby Mode = 20 min., Suspend Mode = 20 min., and HDD Power Down = Disabled.
<b>Max Power Saving</b>	Maximum power management -- <b>ONLY AVAILABLE FOR SL CPU'S</b> . Doze Mode = 20 sec., Standby Mode = 20 sec., Suspend Mode = 20sec., and HDD Power Down = Disabled.
<b>User Defined</b>	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

## PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

If the Max. Power Saving is not enabled, this will be preset to NO.

### Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

<b>Always On</b>	Monitor will remain on during power saving modes.
<b>Suspend--&gt;Off</b>	Monitor blanked when the system enters the Suspend mode.
<b>Susp,Stby--&gt;Off</b>	Monitor blanked when the system enters either Suspend or Standby modes.
<b>All Modes--&gt;Off</b>	Monitor blanked when the system enters any power saving mode.

### Video Off Method

This determines the manner in which the monitor is blanked.

<b>V/HSYNC+Blank</b>	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
<b>Blank Screen</b>	This option only writes blank to the video buffer.
<b>DPMS</b>	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

### Doze Speed (div by)

Sets the CPU's speed during Doze mode. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8. The settings are from 1 to 8.

**Stdby Speed (div by)**

Sets the CPU's speed during Doze mode. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8~0. The settings are from 1 to 8.

**MODEM Use IRQ**

This determines the IRQ in which the MODEM can use. The settings are 3, 4, 5, 7, 9, 10, 11, or NA.

**PM Timers**

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See Above for available selections.

**HDD Off After**

By default, this item is Disabled, meaning that no matter the mode the rest of the system, the hard drive will remain ready. Otherwise, you have a range of choices from 1 to 15 minutes or Suspend. This means that you can select to have your hard disk drive be turned off after a selected number of minutes or when the rest of the system goes into a Suspend mode.

**Doze Mode**

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

**Standby Mode**

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

**Suspend Mode**

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

---

**PM Events**

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

**COM Ports Activity**

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

**LPT Ports Activity**

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

**HDD Ports Activity**

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

### **VGA Activity**

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

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

As above, the choices are On and Off.

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

**IRQ3 (COM2)**

**IRQ4 (COM1)**

**IRQ5 (LPT2)**

**IRQ6 (Floppy Disk)**

**IRQ7 (LPT1)**

**IRQ8 (RTC Alarm)**

**IRQ9 (IRQ2 Redir)**

**IRQ10 (Reserved)**

**IRQ11 (Reserved)**

**IRQ12 (P/S 2 Mouse)**

**IRQ13 (Coprocessor)**

**IRQ14 (Hard Disk)**

**IRQ15 (Reserved)**

### 4.8 PNP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI(Personal Computer Interconnect), is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

ROM PCI/ISA BIOS (2A5IISZ9)  
 PNP/PCI CONFIGURATION SETUP  
 AWARD SOFTWARE, INC.

PnP OS Installed	:No	PCI IRQ Actived By	: Level
Resources Controlled By	:Manual	PCI IDE 2nd Channel	: Enabled
Reset Configuration Data	:Disabled	PCI IDE IRQ Map To	: PCI-Auto
		Primary IDE INT#	: A
IRQ-3 assigned to	:Legacy ISA	Secondary IDE INT#	: B
IRQ-4 assigned to	:Legacy ISA	Assign IRQ for VGA	:Enabled
IRQ-5 assigned to	:PCI/ISA PnP		
IRQ-7 assigned to	:PCI/ISA PnP		
IRQ-9 assigned to	:PCI/ISA PnP		
IRQ-10assigned to	:PCI/ISA PnP		
IRQ-11assigned to	:PCI/ISA PnP		
IRQ-12assigned to	:PCI/ISA PnP		
IRQ-14assigned to	:PCI/ISA PnP		
IRQ-15assigned to	:PCI/ISA PnP		
DMA-0assigned to	:PCI/ISA PnP		
DMA-1assigned to	:PCI/ISA PnP	Esc : Quit	↑↓←→: Select item
DMA-3assigned to	:PCI/ISA PnP	F1 : Help	PU/PD/+/- : modify
DMA-5assigned to	:PCI/ISA PnP	F5 : Old Value(Shift)	F2 : Color
DMA-6assigned to	:PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7assigned to	:PCI/ISA PnP	F7 : Load Setup Defaults	

### **PnP OS Installed**

When set to YES, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows 95. When set to No, BIOS will initialize all PnP cards. So, for non-PnP operating system (DOS, Netware), this option must set to NO.

### **Resources Controlled By**

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

### **Reset Configuration Data**

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The settings are Enabled or Disabled.

### **IRQ 3/4/5/7/9/10/11/12/14/15**

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture. The settings are Legacy ISA or PCI/ISA PnP.

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

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

---

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture. The settings are Legacy ISA or PCI/ISA PnP.

### **PCI IRQ Activated by**

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer. The settings are Level or Edge.

### **PCI IDE 2nd Channel**

The IDE standard supports two channels (interfaces) with two devices on each channel. Enable the second channel if your system has two PCI IDE connectors in use, either on the system board or on expansion boards. Disable the second channel if a second IDE connector is not present or not in use. The settings are Enabled or Disabled.

### **PCI IDE IRQ Map to**

This allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA (Industry Standard Architecture) device rather than a PCI controller. The more apparent difference is the type of slot being used.

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

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

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

## Assign IRQ for VGA

Lets the user choose which IRQ to assign for VGA card.

### **4.9 Load BIOS/Setup Defaults**

This Main Menu item loads the default system values. If the CMOS is corrupted the defaults are loaded automatically. Choose this item and the following message appears:

“ Load Setup Defaults (Y / N) ? N “

To use the Setup defaults, change the prompt to “Y” and press < Enter >

**Note:** The Setup defaults can be customized to increase performance. However the BIOS defaults can always be used as a back up if there is some problem with the mainboard operation.

## 4.10 Special Features Setup

ROM PCI/ISA BIOS (2A69HM4D)  
SPECIAL FEATURES SETUP  
AWARD SOFTWARE, INC.

CPU Type: Intel Pentium-MMX CPU Vcore (Volt): Auto	Ring Power Up COntrol :Enabled Power Up by Alarm :Disable
Esc : Quit    ↑↓→← : Select item F1 : Help PU/PD/+/- : modify F5 : Old Value(Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

### CPU Vcore

This item allows you to select Auto or other voltage. The default settings is Auto.

### Ring Power Up Control

This item allows you to enable/disable ring-in power on your computer.

### Power Up by Alarm

This function is for setting date and time for you computer to boot up. During Disabled, you cannot use this function. During Enabled, Choose the date and time:

<b>Month Alarm</b>	Choose which month, the system will boot up. Choose "0" to indicate don't care.
<b>Day of Month Alarm</b>	Choose which day of the month, the system will boot up. Choose "0" to indicate don't care.
<b>Week Alarm</b>	Choose which week, the system will boot up. Using this function will disable both Month Alarm and Day of month alarm function.
<b>Time(hh:mm:ss) Alarm</b>	Choose what hour, minute, and second of the day, the system will boot up.

**Note:** If you have change the setting, you must let the system boot up until it goes to the operating system. Then, power off the system. This function will work the next time you power on.

4.11 Integrated Peripherals

ROM PCI/ISA BIOS (2A69HM4D)  
 INTEGRATED PERIPHERALS  
 AWARD SOFTWARE, INC.

Internal PCI/IDE :Both	USB Controller :Enabled
IDE Primary Master PIO :Auto	USB Keyboard Support :Disabled
IDE Primary Slave PIO :Auto	
IDE Secondary Master PIO :Auto	
IDE Secondary Slave PIO :Auto	
Primary Master UltraDMA :Auto	
Primary Slave UltraDMA :Auto	
Secondary Master UltraDMA:Auto	
Secondary Slave UltraDMA :Auto	
IDE Burst Mode :Disabled	
IDE Dataport Post Write :Enabled	
IDE HDD Block Mode :Enabled	
Onboard FDD controller :Enabled	
Onboard Serial Port 1 :3F8/IRQ4	Esc : Quit ↑↓←→ : Select item
Onboard Serial Port 2 :2F8/IRQ3	F1 : Help PU/PD/+/- : modify
UART 2 Mode :ASKIR	F5 : Old Value(Shift) F2 : Color
IR Function Duplex :Half	F6 : Load BIOS Defaults
RxD , TxD Active :Hi , Hi	F7 : Load Setup Defaults

Onboard Parallel Port :378H/IRQ7	
Onboard Parallel Mode :ECP/EPP	
ECP Mode Use DMA :3	
Parallel Port EPP Type :EPP1.9	

### **Internal PCI/IDE**

This chipset contains an internal PCI IDE interface which supports two IDE channels. The settings are Primary, Secondary, Both, or Disabled.

### **IDE PIO**

IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship which are determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you have the ability to install up to four separate hard disks.

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. This is simpler and more efficient (and faster).

Your system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode. This is true for the next four setup items:

1. IDE Primary Master PIO
2. IDE Primary Slave PIO
3. IDE Secondary Master PIO
4. IDE Secondary Slave PIO

### **Ultra DMA 33**

IDE hard drive controllers can support Ultra DMA 33 Hard Drive. If you use Ultra DMA hard drive, then you will get a better performance. The settings are Auto, Enabled, and Disabled.

1. Primary Master UltraDMA
2. Primary Slave UltraDMA
3. Secondary Master UltraDMA
4. Secondary Slave UltraDMA

**IDE Data Port Post Write**

PCI speed is faster than the speed of a physical hard disk or CD-ROM. To use a buffer to store the PCI data first then forwards the data to hard disk. The settings are Enabled or Disabled.

**IDE HDD Block Mode**

This item allows you to increase IDE HDD performance, which is dependent on HDD block size. The settings are Enabled or Disabled.

**Onboard FDD Controller**

This should be enabled if your system has a floppy disk drive (FDD) installed on the system board and you wish to use it. Even when so equipped, If you add a higher performance controller, you will need to disable this feature. The settings are Enabled or Disabled.

**Onboard Serial Port 1/Port 2**

This item allows you to determine access onboard serial port 1/port 2 controller with I/O address. The settings are 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, or Auto.

**UART 2 Mode**

This item allows you to determine which Infra Red (IR) function of onboard I/O chip. The settings are Standard, ASKIR, or HPSIR.

**IR Function Duplex**

This item allows you to select the IR function when you select the UART 2 Mode in ASKIR. The settings are Half or Full.

**RxD, TxD Active**

This item allows you to determine the active of RxD, TxD. The settings are “Hi, Hi”, “Lo, Lo”, “Lo, Hi”, or “Hi, Lo”.

### **Onboard Parallel Port**

This item allows you to determine access onboard parallel port controller with I/O address. The settings are 378H/IRQ7, 278H/IRQ5, 3BCH/IRQ7, or Disabled.

### **Onboard Parallel Mode**

Select an operating mode for the onboard parallel (printer) port. Normal EPP (Extended Parallel Port), ECP (Extended Capabilities Port), CEP + EPP PC AT® parallel port Bidirectional port Fast, buffered port Fast, buffered, bidirectional port.

Select Normal unless you are certain your hardware and software both support EPP or ECP mode. The settings are SPP, ECP/EPP, ECP, or EPP/SPP.

### **ECP Mode Use DMA**

Select a DMA channel for the parallel port for use during ECP mode. The settings are 3 or 1.

### **Parallel Port EPP Type**

This item allows you to determine the IR transfer mode of onboard I/O chip. The settings are EPP1.9 or EPP1.7.

### **USB Controller**

This items allows you to determine, whether to enable the USB(Universal Serial Bus) function or not. The settings are Enabled or Disabled.

### **USB Keyboard Support**

This items allows you to use USB Keyboard in DOS without the need to install any driver. If you want to use this function, you must enable USB Controller function. The settings are Enabled or Disabled.

## 4.12 Supervisor/User Password Setting

This Main Menu item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program. Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

"Enter Password:"

2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters. For no password just press <Enter>.
3. After you enter the password, the following message appears prompting you to confirm the password:

"Confirm Password:"

4. Enter exactly the same password you just typed in to confirm the password and press <Enter>.
  5. Move the cursor to Save & Exit Setup to save the password.
  6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.
  7. Move the cursor to Save & Exit Setup to save the option you did. Otherwise, the old password will still be there when you turn on your machine next time.
-

### 4.13 IDE HDD Auto Detection

You can use this utility to automatically detect the characteristics of most hard drives.

When you enter this utility, the screen asks you to select a specific hard disk for Primary Master. If you accept a hard disk detected by the BIOS, you can enter “Y” to confirm and then press <Enter> to check next hard disk. This function allows you to check four hard disks and you may press the <Esc> after the <Enter> to skip this function and go back to the Main Menu.

ROM ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTOR MODE
Primary Master:	Auto	0	0	0	0	0	AUTO
Primary Slave :	Auto	0	0	0	0	0	AUTO
Secondary Master :	Auto	0	0	0	0	0	AUTO
Secondary Slave :	Auto	0	0	0	0	0	AUTO

Select Primary Master				Option (N=Skip) : N			
OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR MODE	
2	2112	1023	64	0	4094	63	LBA
1	2113	4095	16	65535	4094	63	NORMAL
3	2113	2047	32	65535	4094	63	LARGE

[ESC: Skip]

## Chapter 5

### SIS® 5597/5598 VGA DRIVER

#### 1. Overview

The SiS®5597/5598 on-chip VGA integrates 2D Graphic/Video accelerator. It's 2D performance produced compelling interactive multimedia. It is also designed for high-quality MPEG/video playback to users.

##### 1.1 System Requirements

This section describes system requirements for the SiS®5597/5598 VGA Driver installation and Usage.

<b>Computer</b>	90MHz Pentium®processor or above
<b>Monitor</b>	VGA Support, minimum 640x480 resolution
<b>Operating system</b>	DOS®5.0 or higher, Windows®95, Windows®NT 3.51 or 4.0, or OS/2®
<b>CD-ROM</b>	Double Speed or Higher
<b>Chipset</b>	SiS®5597/5598
<b>VGA BIOS</b>	Version 1.01 or Higher

##### 1.2 CD-ROM Contents

Includes the following files and sub-directories:

<b>README.TXT</b>	Installation and User's Guide.
<b>RELEASE.TXT</b>	Always read the driver release note.
<b>MM&lt;DIR&gt;</b>	SISTAG, RELEASE.TXT, BIOS<DIR>, DOS<DIR>, ADI42<DIR>, ET<DIR>, OS2<DIR>, WIN95<DIR>, and WINNT<DIR>

## 2. SiS® 5597/5598 VGA Driver Setup & Usage Procedures

Insert the MS-5150 CD into your CD-ROM drive. This CD will auto-run. This will display installation for VGA driver, Sound driver, and Network driver. Also included are Norton® Antivirus and LDCM (optional). Just click the button for automatic installation for VGA driver.

### 2.1 Windows® 95

#### 2.1-1 Display Driver Installation Procedure:

- Step 1:** Click **Start** menu and select **Control Panel** from **Settings** group.
- Step 2:** Select **Display** icon.
- Step 3:** Select **Settings** index in the display properties sheet.
- Step 4:** Select **Change Display Type** button.
- Step 5:** Select **Change...** button in **Adapter Type** group.
- Step 6:** Select **Have Disk** button.
- Step 7:** Insert the **SiS® 5597/5598 CD-Title Disk** into CD-ROM Drive.
- Step 8:** When the Install from Disk dialog box appears, look for your CD-ROM drive and type: `\\MM\WIN95`.
- Step 9:** When the **Change Display** dialog box appears, click **Close**.
- Step 10:** Select **Close** or **Apply** button from display properties sheet.
- Step 11:** A message will appear stating you must restart the Windows® 95 system, select **yes** to restart.
- Step 12:** After restarting, Windows® 95 will run on 640x480x256 color, 75NI.

**2.1-2 Changing resolution, color depth, and refresh rate:**

- Step 1:** Click **Start** menu and select **Control Panel** from **Settings** group.
- Step 2:** Select **Display** icon.
- Step 3:** Select **Settings**.
- Step 4:** Select Color Palette to change between 16 color, 256 color, Hi color, or True color.
- Step 5:** To select desktop resolution from 640x480, 800x600, 1024x768, and 1280x1024.
- Step 6:** Select Refresh rate list box to change the screen refresh rate.
- Step 7:** Click OK or Apply.

**2.1-3 Windows®95 Utility Installation:**

- Step 1:** Place the SiS®5597/5598 Cd-Title Disk into the CD-ROM drive.
- Step 2:** Click **Start** menu and select **Run...** menu item.
- Step 3:** In Run dialog, typing the source execution file then press OK. The execution file in CD-Title is at CD\_ROM Drive:\MM\WIN95\SETUP.exe.
- Step 4:** Setup procedure will create a “SiS Multimedia Vx.xx” program group.  
This will contain 3 items:  
- Multimedia Manager  
- SiS®MMPlayer  
- Center Screen
- Step 5:** A setup successful dialog will appear when setup is complete, user can choose to restart the system now or later.

## 2.2 Windows® NT 4.0

### 2.2-1 Display Driver Installation Procedure:

- Step 1:** Click **Start** menu and select **Control Panel** from **Settings** group.
- Step 2:** Select **Display** icon.
- Step 3:** Select **Settings** on the Display Properties.
- Step 4:** Select **Display Type**.
- Step 5:** Select **Change** from the **Adapter Type** Area.
- Step 6:** Select **Have Disk** of Change Display.
- Step 7:** Insert the **SiS® 5597/5598 CD-Title Disk** into CD-ROM Drive.
- Step 8:** When the Install from Disk dialog box appears, look for your CD-ROM drive :**\MM\WINNT\WINNT4.0**.
- Step 9:** When the **Change Display** dialog box appears, click **OK**.
- Step 10:** 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 your system.

### 2.2-2 Changing resolution, color depth, and refresh rate:

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

## 2.3 IBM® OS/2® Warp 3.0 (Double Byte Character)

### 2.3-1 Display Driver Installation Procedure:

- Step 1:** Before installing SiS® OS/2® Warp display driver, start up OS/2® system in standard VGA mode.
- Step 2:** Select **Command Prompt** folder.
- Step 3:** Select **OS/2® window** or **OS/2® full screen** icon.
- Step 4:** Place the SiS® 5597/5598 CD-Title Disk into the CD-ROM Drive.
- Step 5:** Change directory to CD-ROM drive:\MM\OS2\DBCS.30.
- Step 6:** Type **SETUP** then press **ENTER**.
- Step 7:** Setup procedure will create a **SiS® Install** icon on the desktop.
- Step 8:** Shutdown and reboot the OS/2® Warp system.
- Step 9:** When system reboot, double click the **SiS® Install** icon. It will perform the further installation.
- Step 10:** When the **Select Screen Parameters for SiS® SVGA** dialog appears, select the resolution, color depth and frame rate you would like, then click **OK**.
- Step 11:** The installation program will create a **SiS® Setup** icon at the desktop.
- Step 12:** Shutdown and re-boot OS/2® Warp.

## 2.4 IBM® OS/2® Warp 3.0 (Single Byte Character)

### 2.4-1 Display Driver Installation Procedure:

- Step 1:** Before installing SiS® OS/2® Warp display driver, start up OS/2® system in standard VGA mode.
- Step 2:** Select **Command Prompt** folder.
- Step 3:** Select **OS/2® window** or **OS/2® full screen** icon.
- Step 4:** Place the SiS® 5597/5598 CD-Title Disk into the CD-ROM Drive.
- Step 5:** Change directory to CD-ROM drive:\MM\OS2\SBCS.30.
- Step 6:** Type **SISINST** then press **ENTER**.
- Step 7:** When the **Select Screen Parameters for SiS® SVGA** dialog appears, select the resolution, color depth and frame rate you would like, then click **OK**.
- Step 8:** The installation program will create a **SiS® Setup** icon at the desktop.
- Step 9:** Shutdown and re-boot OS/2® Warp.

## Chapter 6

### LAN DRIVER

For Concerto I (MS-5150 version 1.X), please refer to W89C940 Ethernet LAN Driver and for Concerto II (MS-5150 version 2.X) refer to Intel®82558 Ethernet LAN Driver.

## 6.1 W89C940 Ethernet LAN Driver (Concerto I)

### 6.1-1 Overview

The W89C940F ELANC-PCI (Twisted-pair Ether-LAN Controller with PCI Interface) integrates a PC/AT® PCI bus interface logic into a single chip. The ELANC-PCI provides an easy way of implementing the interface between an IEEE 802.3-compatible Ethernet® and a personal computer. In addition, a fast DMA function is provided to improve performance in packet transmission and reception.

#### Features

- Fully Compatible with IEEE 802.3 standard
- Software compatible with Novell®NE2000™
- Fast DMA operation to enhance network access performance
- UTP interface available
- 32K x 8-20 SRAM Interface provided
- IO prefetch function available
- EEPROM on-board programming function
- LED display for network link/activity status
- Signature register for device identification

## 6.1-2 W89C940 LAN Driver Setup

### Windows®95

Insert the provided CD-ROM into the CD-ROM drive. The CD-ROM will autorun. Click the button for installing LAN driver. Wait for the setup to complete.

### Windows®NT 4.0

- Step 1:** Insert the Network CD-Title Driver disk into the CD-ROM drive:
- Step 2:** Copy all the files in the **Net** directory of the CD into the hard disk.
- Step 3:** Go to **Network of Control Panel**.
- Step 4:** Click the **Add** button in the **Network** Dialog Box.
- Step 5:** From the **Network** dialog box, select **Adapter** and click the **Add** button.
- Step 6:** In the **Select Network Adapters** dialog box, click the **Have Disk...** button.
- Step 7:** Click **Browse** and choose the directory in the hard disk that contains **W940ND.INF**, then click **OK**.
- Step 8:** A dialog box will show **W89C940 PCI Ethernet Adapter**, press **ENTER**.
- Step 9:** Follow screen instructions to complete the process.

### 6.1-3 How to install the Novell® RPL Server (Boot ROM)

1. You must create a remote boot diskette. The files on this boot diskette, for example, are the following:

COMMAND	COM	
IO	SYS	attrib -s -h io.sys
MSDOS	SYS	attrib -s -h msdos.sys
LSL	COM	
940-OD	COM	
IPXODI	COM	
NETX	EXE	
AUTOEXEC	BAT	
CONFIG	SYS	

The AUTOEXEC.BAT file contains these lines :

```
PATH H:\LOGIN;  
SET COMSPEC=H:\LOGIN\COMMAND.COM  
DOSKEY  
LSL  
940-OD  
IPXODI  
NETX
```

The CONFIG.SYS file contains these lines :

```
DEVICE=A:\HIMEM.SYS  
STACKS=9,256  
DOS=HIGH,UMB  
FILES=30  
BUFFERS=30  
LASTDRIVE=G  
FCBS=16,8
```

2. Boot a workstation with at least one floppy disk drive, and log in to the server as SUPERVISOR.
3. Change directory to SYS:SYSTEM
4. With the DOS boot diskette in driver A: execute the DOSGEN utility. This creates a DOS boot image file named NET\$DOS.SYS.
5. Copy NET\$DOS.SYS to the SYS:LOGIN directory.
6. Copy RBOOT.RPL, ETHER.RPL to the SYS:LOGIN directory.  
Copy a:\Autoexec.bat into the SYS: Login
7. Copy RPL.NLM, 940-OD.LAN, ETHERTSM.NLM, MSM31X.NLM to the SYS:SYSTEM directory.

**Note:** 1. It depends on file server's version.

In the RPL developer's kit,

for Netware 3.11, use .\RPL\NLM\311\RPL.NLM;

for Netware 3.12/4.x use .\RPL\NLM\40\RPL.NLM;

**Note:** 2. Ethertsm.nlm and Msm31x.nlm must be a new version, or can be found from our software kit \ODI4.X\SERVER\INSTALL

8. Edit the AUTOEXEC.NCF file in the SYS:SYSTEM directory.

For example: (IF W89C940 CARD IS USED ON SERVER)

```

file server name WINBOND®
ipx internal net 831123

load 940-OD name=W940_1 frame=ETHERNET_802.2
load 940-OD name=W940_2 frame=ETHERNET_II
load 940-OD name=W940_3 frame=ETHERNET_802.3
load 940-OD name=W940_4 frame=ETHERNET_Snap

bind ipx to W940_1 net=21
bind ipx to W940_2 net=22
bind ipx to W940_3 net=23
bind ipx to W940_4 net=24

; ----- for RPL file server -----
load rpl
bind rpl to W940_1
; ----- for RPL file server -----

mount all

Set immediate purge of deleted files=on
load monitor

```

9. Shutdown the file server, and reboot it.

10. Configure the W89C940 to “Boot ROM Enable”.

11. Reboot the workstation.

12. Now, when the file server is running, the workstation equipped with Boot ROM on the W89C940 card will be attached to the file server without any floppy.

## 6.2 Intel® Fast Ethernet LAN Driver (Concerto II)

### 6.2-1 Overview

The 82558 is a sophisticated 32-bit PCI component, with enhanced scatter-gather bus mastering capabilities. Its true 32-bit architecture enables it to perform high speed data transfers on the PCI bus using four DMA channels.

#### Features

- IEEE 802.3/802.3u 10BASE-T and 100BASE-TX compatible
- Glueless 32-bit PCI bus master interface
- Backwards software compatible to the 82557
- Internal transmit and receive FIFOs (3 kbytes each)
- Back-to-back transmit at 100 Mbps within minimum IFS
- EEPROM support for configuration and customized feature selection
- Advanced configuration and Power Interface Specification, Revision 1.0, and PCI Power Management Specification, Revision 1.0 compliant
- Remote Wake Up (Magic Packet\*) support in APM and ACPI modes
- ACPI “interesting” packet wake support in D0 to D3<sub>cold</sub> low power states
- IEEE 802.3u Auto-Negotiation support for 10BASE-T and 100BASE-TX
- Full or half duplex capable at 10 or 100 Mbps
- IEEE 802.3x flow control support

## 6.2-2 Intel® 82558 LAN Driver Setup

### Windows®95

Insert the provided CD-ROM into the CD-ROM drive. The CD-ROM will autorun. Click the button for installing LAN driver. Wait for the setup to complete.

### Windows®NT 4.0

- Step 1:** Insert the Network CD-Title Driver disk into the CD-ROM drive:
- Step 2:** Copy all the files in the **E100B** directory of the CD into the hard disk.
- Step 3:** Go to **Network of Control Panel**.
- Step 4:** Click the **Add** button in the **Network** Dialog Box.
- Step 5:** From the **Network** dialog box, select **Adapter** and click the **Add** button.
- Step 6:** In the **Select Network Adapters** dialog box, click the **Have Disk...** button.
- Step 7:** Click **Browse** and choose directory in the hard disk that contains **OEMSETUP.INF**.
- Step 8:** A dialog box will show **Intel® EtherExpress Pro Adapter**. Press **ENTER**.
- Step 9:** Follow screen instructions to complete the process.

## Chapter 7

### ESS®1869 AUDIO DRIVER

#### 1. Overview

The ESS®1869 Audio chip allows you to play high quality music for Windows® multimedia application and computer games that lets you enjoy CD-quality digital audio.

#### Chip List:

ESS® Audio ES1869F

#### System Requirements

**Computer system requirements:** 90MHz Pentium® processor or higher

**Monitor:** VGA Support, minimum 640x480 resolution

**Operating system:** DOS 5.0 or higher, Windows®95, Windows®NT 4.0

**CD-ROM:** Double Speed or Higher

## 2. Driver

### 2.1 Install Enhance Audio Drivers for Windows® 95

After installing Windows® in the mainboard. To get a higher performance, you need to install the Driver.

**To install Enhance Audio Drivers, follows the steps below:**

**Step 1:** Power up your computer and wait for Windows®95

**Step 2:** Insert the **Audio Driver** into your CD-ROM drive.

**Step 3:** Click the mouse right button on **My Computer** Icon.

**Step 4:** Select the **Properties**, then click on the **System** Icon.

**Step 5:** Select **Device Manager** in the **System Properties**.

**Step 6:** Remove **ESS®1869 Plug and Play Audio Driver** in the other devices.

**Step 7:** Remove **ESS®1688 Plug and Play Audio Driver** in the **Sound, Video, and Game Controller**.

**Step 8:** Click on the **Refresh** button.

**Step 9:** The system will look for the **ESS®1869 Plug and Play Audio Drive**.

**Step 10:** Click **Next** button.

**Step 11:** Change the CD-ROM Drive directory to: sound\WIN95.

**Step 12:** Click **OK**.

**Step 13:** Follow screen instructions to complete the process.

## 2.1 Install Enhance Audio Drivers for Windows® NT 4.0

After installing Windows® NT. To get a higher performance, you need to install the Driver.

**To install Enhance Audio Drivers, follows the steps below:**

- Step 1:** Click the **Control Panel** Group.
- Step 2:** Click the **Multimedia** icon.
- Step 3:** Select **Devices** and click the **Add** Button.
- Step 4:** choose **unlistd or updated driver**.
- Step 5:** Insert the Audio Driver CD-Title into the CD-ROM drive.
- Step 6:** Change the CD-ROM Drive directory to:\Sound\NT40.
- Step 7:** Click the **OK** button.
- Step 8:** Follow screen instructions to complete the process.

## Chapter 8

### MEMORY COMPATIBILITY TEST

Different memory modules were tested for compatibility. The testing configuration are as follows:

<b>BIOS</b>	W550MS V1.5B4
<b>CPU</b>	AMD®K6/233 MHZ
<b>Cache</b>	512KB (W25P240AF-6)
<b>VGA Card</b>	SiS 5597 PCI VGA Card (on board)
<b>Hard Disk</b>	Fujitsu M1638TAU (2.5GB) IDE HardDisk
<b>CD-ROM</b>	Sony CDU-511 16X IDE CD-ROM
<b>FDD</b>	NEC FD1231H 1.44MB FDD x 1
<b>Mouse</b>	Microsoft Mouse (PS/2)
<b>PSU</b>	TIGER TG-2506-C

#### Memory Modules Tested

Manufacturer	Model Number	Type	Size	Result
Fujitsu	81117822A-100	SDRAM	8MB	OK
Fujitsu	81117822A-100	SDRAM	16MB	OK
Hitachi	51W18165TT6	EDO	32MB	OK
Hitachi	HM5216805TT10	SDRAM	32MB	OK
Hitachi	HM5216805TT10H	SDRAM	32MB	Fail
Hyundai	HYM5V64804 TFG	EDO	64MB	OK
Hyundai	HY57V168010A	SDRAM	16MB	OK
Hyundai	HYM7072A801-TFG	SDRAM	64MB	OK
LG	GM71VS17803BLT6	EDO	16MB	OK
LG	GM72V16821BT10K	SDRAM	16MB	OK

Manufacturer	Model Number	Type	Size	Result
LG	GM72V16821BT10K (ECC)	SDRAM	16MB	OK
LG	GM72V16821BT10K	SDRAM	32MB	OK
LG	GM72V16821CT10K	SDRAM	32MB	Fail
Mitsubishi	M5M4V16S30CTP-12	SDRAM	16	OK
Mitsubishi	M5M4V64S40ATP	SDRAM	64	OK
NEC	D4516161G5-A12-7JF	SDRAM	8	OK
NEC	D4516161G5-A12-7JF	SDRAM	16	OK
NEC	D4516821G5-A12-7JF	SDRAM	16	OK
NEC	D4516821G5-A12-7JF	SDRAM	32	Fail
NEC	D4516821AG5	SDRAM	32MB	OK
SEC	KM44V4104BS-L6	EDO	64MB	OK
SEC	KM416S1120AT-G10(2*8)	SDRAM	16MB	OK
SEC	KM416S1120AT-G10(1*16)	SDRAM	16MB	OK
SEC	KM48S2020AT-G10	SDRAM	16MB	OK
SEC	KM48S2020AT-G12	SDRAM	32MB	OK
SEC	KM48S2020BT-G10	SDRAM	32MB	OK
SEC	KM44S4020AT-G10(4*4)	SDRAM	32MB	OK
SEC	KM44S4020AT-G12(4*4)	SDRAM	32MB	OK
TI	TMX626812BDGECC	SDRAM	16MB	OK
Toshiba	TC59S16016AFT-10	SDRAM	16MB	Fail
Toshiba	TC59S1608AFT-10	SDRAM	32MB	Fail
Toshiba	TC59S1608AFT-10 (ECC)	SDRAM	32MB	OK
Vanguard	VG26V17405CJ-6	EDO	32MB	OK

**Note:** Hitachi (HM5216805TT10H) and LG (GM72V16821CT10K) will be unstable. Toshiba (TC59S1616AFT-10/TC59S1608AFT-10) generates garbage. NEC 16-bit SDRAM (D4516821G5 part number and 97xxLxxxx lot number have many data conflict with the chipset.) NEC declared a new 4th generation 16M-bit SDRAM (D4516821AG5) that don't have this problem .