

## **Chapter 1**

### **INTRODUCTION**

The NLX EX3 mainboard is a high-performance personal computer mainboard based on the Pentium® II processor. The mainboard supports Intel® 82558 Network chip, YAMAHA YMF715 sound chip and ATI 3D RAGE PRO/RAGE IIC for graphics accelerator. The Pentium® II processor supports MMX™ (Multimedia Extension) technology.

The mainboard uses the highly integrated Intel® 82440EX AGPset which optimize the system bandwidth and concurrency with the implementation of Quad Port Acceleration (QPA). QPA provides 4-port concurrent arbitration of the processor bus, graphics, PCI bus and SDRAM.

The Intel® 82371EB chipset integrates all system control functions such as ACPI (Advanced Configuration and Power Interface). The ACPI provides more Energy Saving Features for the OSPM(OS Direct Power Management) function. The Intel® 82371EB chipset also improves the IDE transfer rate by supporting Ultra DMA/33 IDE that transfers data at the rate of 33MB/s.

The mainboard also supports the W83781D System Hardware Monitor Controller as optional function. The System Hardware Monitor function includes: CPU /power supply/chassis fan revolution detect, CPU/system voltage monitor, system temperature monitor, and chassis intrusion detect.

## **1.1 Mainboard Features**

### **CPU**

- Slot 1 for Pentium® II processor.
- Supports 200MHz, 233MHz, 266MHz, 300MHz, and 333MHz.
- Core/Bus ratios are x2, x2.5, x3, x3.5, x4, x4.5, x5, x5.5, x6 and higher.

### **Switching Voltage Regulator**

- On-board switching mode DC-DC Step Down Regulator.
- Conforms to Intel® VRM ver 8.1 specifications.
- Over-Voltage and Over-Current protection.

### **Chipset**

- Intel® 82440EX/LX AGP Chipset.

### **Clock Generator**

- 66.6MHz clocks are supported.

### **Main Memory**

- Supports four memory banks using two 168-pin unbuffered DIMM sockets.
- Supports a maximum memory size of 512MB.
- Supports 3.3v unbuffered DIMM.
- Supports Symmetric and Asymmetric DIMM.
- Supports EDO and SDRAM memory.

### **VGA**

- ATI® 3D RAGE PRO/RAGE IIC
  - Running on AGP BUS 2x for RAGE PRO/1X for RAGE IIC
  - Onboard 2MB/ 4MB SGRAM
  - 3D Acceleration.

**System Hardware Monitor**

- This can be used with Intel® LDCM to monitor system voltage, system temperature & fan rotation speed.
- This can also be used to monitor overall system status over the network.
- System temperature sensor: (TOP Tech)
  - detect Pentium® II processor's temperature.
- System voltage monitor:
  - monitor CPU core voltage, CPU interface voltage, 3.3v, ±12v, ±5v
- Fan speed monitor:
  - monitor chassis fan, power fan & CPU cooling fan speed.
- Chassis intrusion sensor: (reserved)
  - monitor any intrusion on the Chassis.

**Power Management Features**

- Doze/Standby/Suspend mode.
- System management mode compliant.
- Support APM 1.2.
- Meet ACPI spec.
- PC97 compliant.

**Sound**

- YAMAHA YMF715
- Built-in OPL3 (FM synthesizer)
- Supports Sound Blaster game compatibility
- Supports Windows sound system compatibility
- Support Plug and Play.
- Full duplex DMA allowing 8-bit or 16-bit data for record and playback.
- 3D audio effects.
- Stereo enhancement support.
- Advanced power management.

**Network**

- Intel® 82558 10/100M Ethernet.
- WFW baseline & NET PC specs compliant.
- ACPI
- Magic packet filtering to wake-up LAN.
- ARP & FLEXIBLE frame filtering.
- Software drivers are backwards compatible.

**Note:** Requires an ATX power supply with 720mA 5VSB (5v Stand by).

**Rear Mainboard Connectors**

- PS/2® keyboard interface and PS/2® mouse interface.
- One COM port connector.
- One VGA port connector.
- One printer port with SPP/EPP/ECP function.
- One USB connector.
- One MIDI/Joystick connector.
- One RJ-45 LAN connector.
- Audio connectors: Speaker/Line-In/Mic.

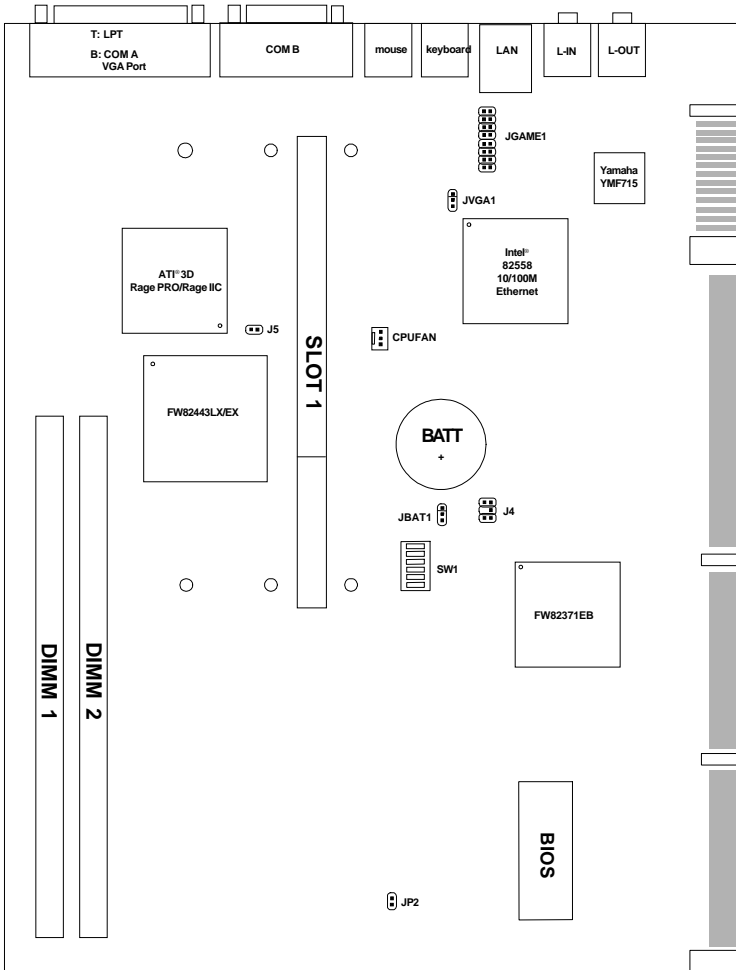
**Dimension**

- NLX Form Factor: 20.7cm(L) x 25.4cm(W) x 4 layers PCB.

**Other Features**

- Bulk Erase Flash ROM.
- Supports DMI.
- System Wake-up by modem.
- System Wake-up by alarm.
- Soft-power off. (Windows® 95)
- Polyfuse function.
  - this function works when the electric current is larger than 2A. It will become an open circuit to protect your mainboard. Turn the power off for 1-3 secs for polyfuse to recover.
- LAN wake-up. (reserved)
- Keyboard password wake-up system. (reserved)
- Restore AC power loss status.

### 1.2 Mainboard Layout



MS-6125

## Chapter 2

### HARDWARE INSTALLATION

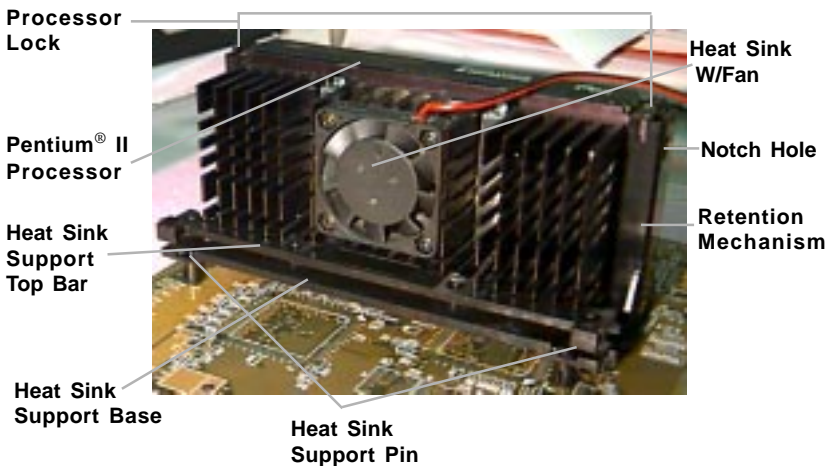
#### 2.1 Central Processing Unit: CPU

The mainboard operates with **Intel® Pentium® II processor with MMX™ technology**. The mainboard uses a CPU Slot called Slot 1 for easy CPU installation and a DIP switch (SW1) to set the proper speed for the CPU. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

### 2.1-1 CPU Installation Procedures

Different kinds of Pentium® II processor that is currently used: the OEM version, the Boxed version, and Celeron™. OEM Pentium® II Processor has no Heat Sink, Fan and Heat Sink Support, the Boxed Pentium® II Processor is provided with Heat Sink w/ fan and Heat Sink Support, while the Celeron™ processor is a plane processor card without cover or heatsink..

#### A. OEM Pentium® II processor Installation Procedure



#### Required Things:

**Pentium® II processor** - Processor.

\***Retention Mechanism(RM)** - Plastic Guide that holds the S.E.C. Cartridge in the Slot 1 connector.

\***Retention Mechanism Attach Mount(RMAM)** - Bolt/Bridge assemblies inserted up through the bottom of the motherboard. RM secures to RMAM ( 2 RMAM required per RM ).

\***Heat Sink Support Base (HSSBASE)** - Plastic support bar mounted to the mainboard under the ATX heatsink.  
(One leg is always bigger than the other one)

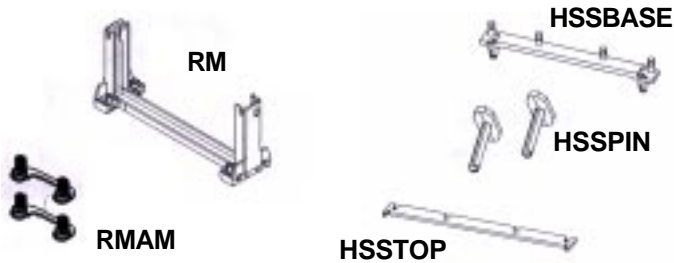
\***Heat Sink Support Pin (HSSPIN)** - Plastic pins inserted through the HSSBASE to secure it to the mainboard (2 required per Assembly).

\***Heat Sink Support Top Bar (HSSTOP)** - Plastic bar that clips onto the HSSBASE through the fins on the ATX heatsink.

\*\***Heat Sink w/ fan** - Heat Sink that can be attached to the **Pentium® II processor** with metal clip.

**Note:** \* Provided by MSI mainboard.

\*\* Provided by Special request.

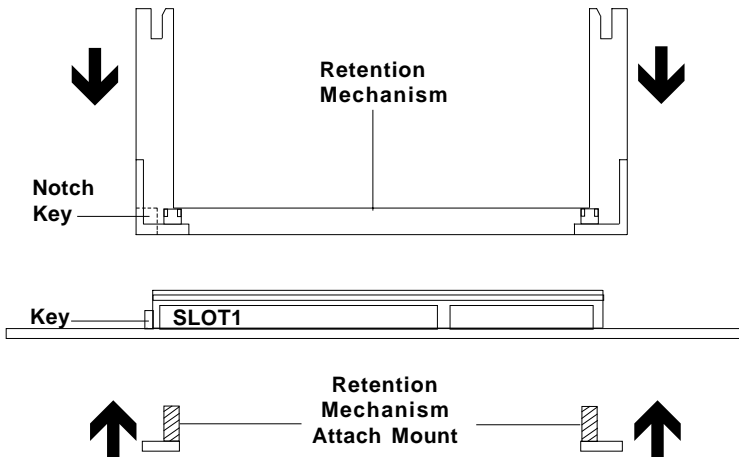




**Step 1:** Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

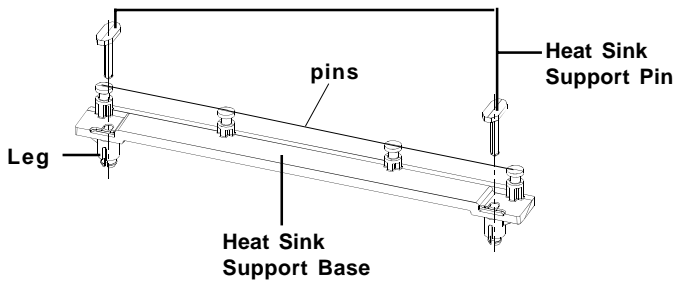
**Step 2:** Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.



**Step 3:** Install the Heat Sink Support Base.

Look for the Two holes across Slot 1, and match it with the Two legs of the Heat Sink Support Base for the proper direction. Take note that one hole/leg is bigger than the other. The Four top pins of the Heat Sink Support Base should also be oriented towards Slot 1.



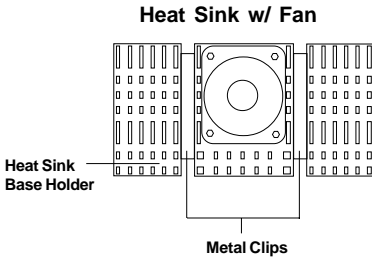
Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

**Step 4:** Install the Heat Sink Support Pin.

Push the Heat Sink Support Pins onto the two holes of the Heat Sink Support Base. Check for a perfect fit. These pins are used to secure the Heat Sink Support Base.

**Step 5:** Install the Heat Sink with Fan to the Processor.

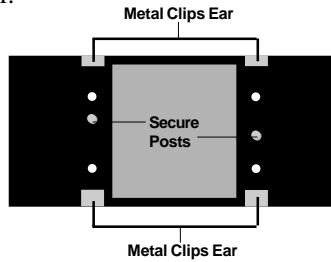
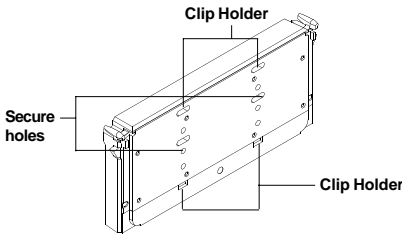
Push down the metal clips, so that they are in line with the back of the Heat Sink. Be careful, so as not to detach the metal clips from the Heat Sink.



↓  
The arrow should be pointing down.

In case the metal clips are detached from the Heat Sink, re-attach them. Look for the arrow on the metal clip. This arrow should be pointing down and aligned with the Heat Sink Support Base Holder.

Attach the Heat Sink to the processor.



**Pentium® II processor (Back)**

**Heat Sink w/ Fan(Back)**

- Look at the back of the Heat Sink and take note of the 2 secure posts. Insert these 2 Secure posts to the 2 secure holes on the back of the processor.
- Align the ears of the metal clips with the clip holders on the back of the processor. Use a screw driver to push the metal clips onto the clip holders. Check for a perfect fit.

**Step 6:** Install the Processor.

Unlock the Processor by pushing in the Processor Locks.



Insert the Processor like inserting a PCI or an ISA card.

**Step 7:** Lock the Processor Locks.

Secure the CPU by pulling the Processor Locks out.



**Step 8:** Install the Heat Sink Support Top Bar.

Push the Heat Sink Support Top Bar to the Heat Sink Support Base, Until you hear a “click” sound. Check for a perfect fit.



**Heatsink  
Support Top  
Bar**

The installation is now complete.

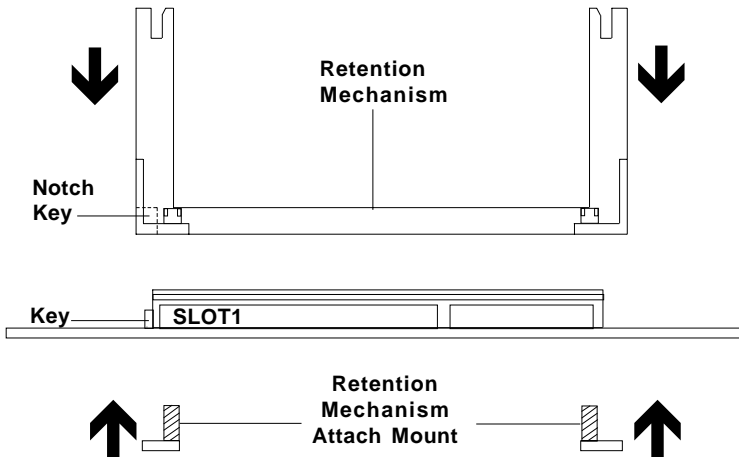
**B. Boxed Pentium® II processor Installation Procedures**

The Boxed Pentium® II processor has a built-in Fan and Heat Sink. It also has a Heat Sink Support. So if you're going to use the Boxed processor, all you need is the Retention Mechanism.

**Step 1:** Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

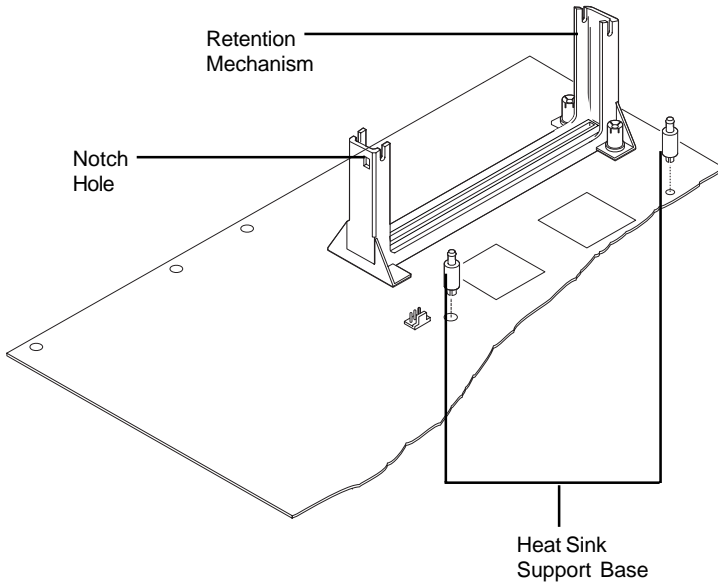
**Step 2:** Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.



**Step 3:** Install the Heat Sink Support Base.

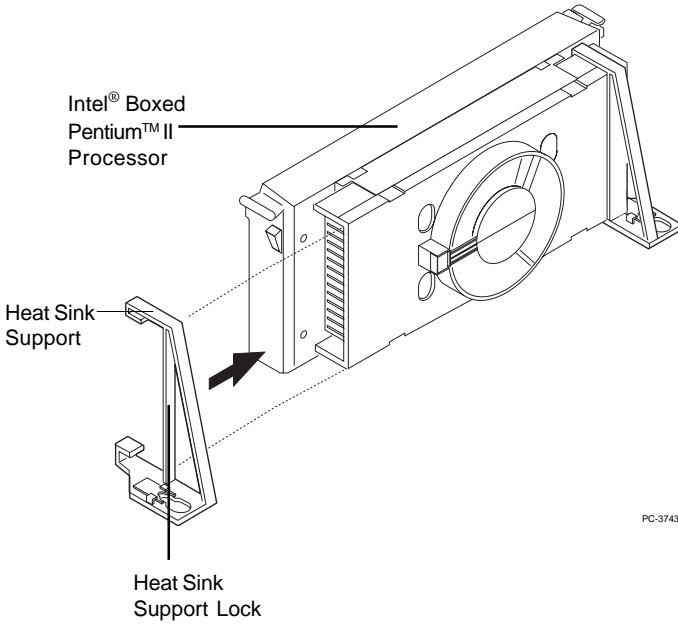
Look for the 2 holes across Slot 1, and match it with the 2 Heat Sink Support Base. Take note that one hole/base is bigger than the other.



Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

**Step 4:** Install the Heat Sink Support.

Attach the 2 Heat Sink Supports to the sides of the Processor. These Heat Sink Supports will fit in any direction, so be sure that the Heat Sink Support Locks are oriented outwards for the proper direction.

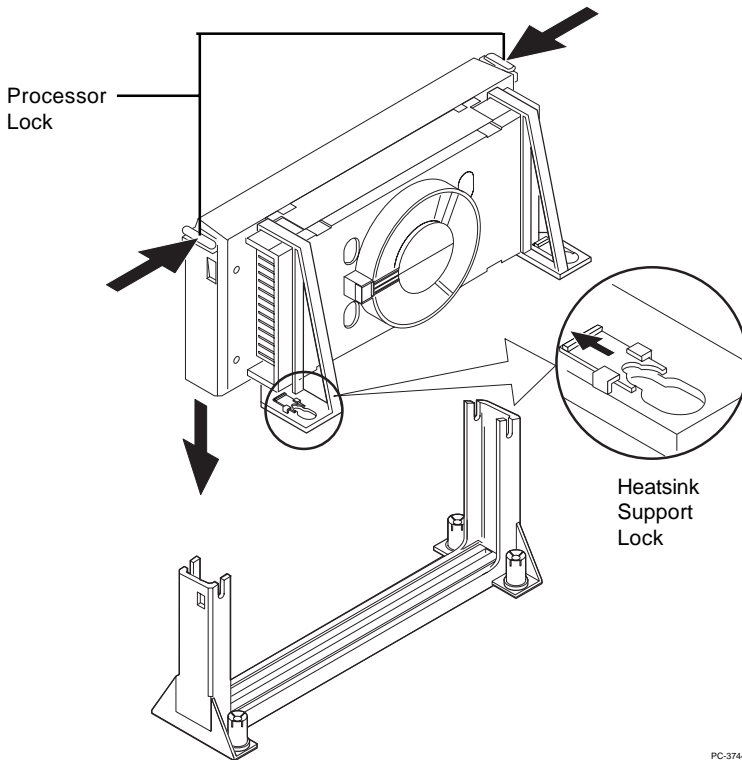


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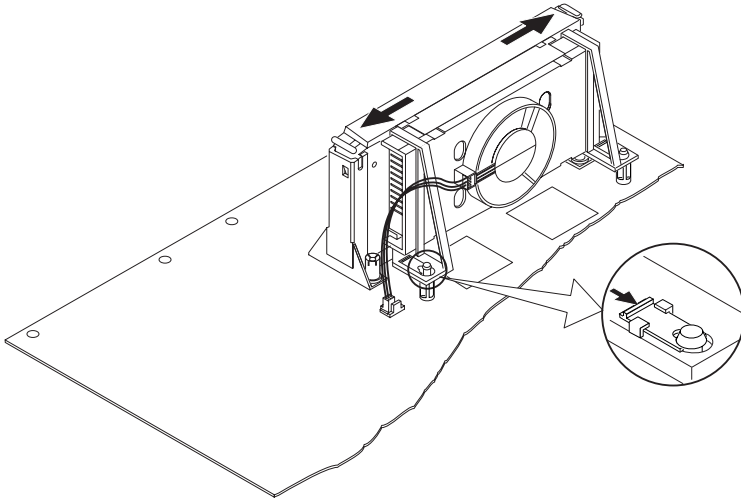


**Step 5:** Unlock the Processor Locks and Heat Sink Support Locks.

Push in the Processor Locks. Open the Heat Sink Support Locks.



**Step 6:** Insert the Processor like inserting a PCI or an ISA card.



**Step 7:** Lock the Processor Locks and Heat Sink Support Locks

Secure the CPU by pushing out the Processor Locks. Close the Heat Sink Support Locks.

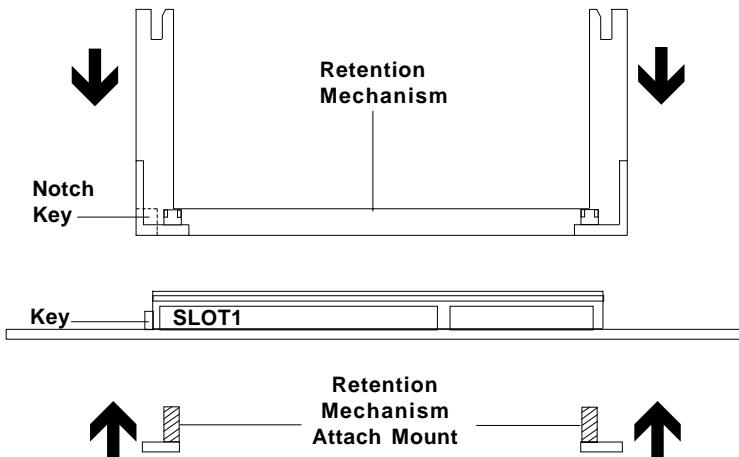
The installation is now complete.

**C. OEM Celeron™ Processor Installation Procedures**

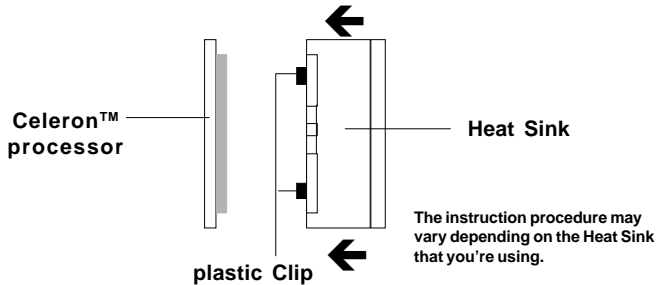
**Step 1:** Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

**Step 2:** Install the Retention Mechanism.

Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for proper direction. Then, attach the Retention Mechanism to the Retention Mechanism Attach Mount. Use a Screwdriver to secure the Retention Mechanism.



**Step 3:** Install the MSI Heat Sink (optional) to the Processor.

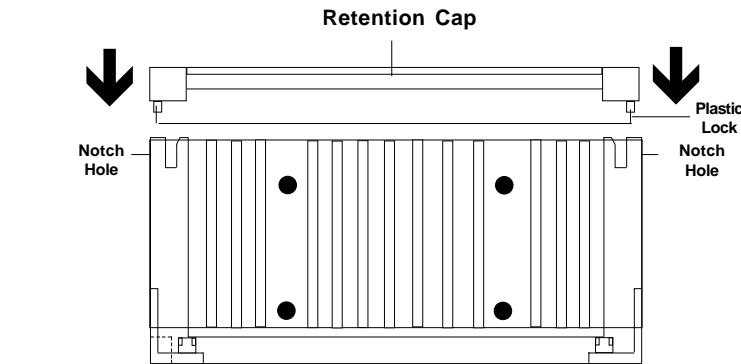


Push down the plastic clips, so that they are in line with the hole on the processor. Check for perfect fit.

**Step 4:** Install the Processor.

Insert the Processor like inserting a PCI or an ISA card.

**Step 5:** Lock the Processor



Lock the processor by putting the Retention Cap provided. Take note of the two plastic lock at the side of the Retention Cap. This two plastic lock should be aligned properly into the Retention Mechanism notch hole.

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**2.1-2 CPU Core Speed Derivation Procedure**

1. The DIP Switch SW1 (5 & 6) is used to adjust the CPU clock frequency.

<b>SW1</b>		<b>CPU</b>
<b>5</b>	<b>6</b>	<b>Clock</b>
OFF	OFF	66.8MHz
OFF	ON	68.5MHz*
ON	OFF	75MHz*

**Note:** We don't guarantee 68.5MHz and 75MHz bus frequency. It might not be stable.

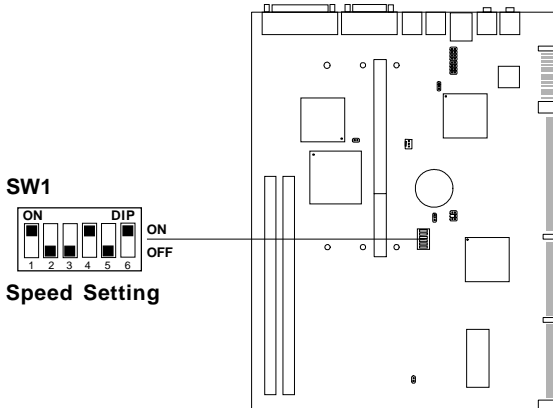
2. The DIP Switch SW1 (1, 2, 3, and 4) is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

$$\begin{aligned}
 \text{If } & \text{CPU Clock} &= & 66\text{MHz} \\
 & \text{Core/Bus ratio} &= & 4 \\
 \text{then } & \text{CPU core speed} &= & \text{Host Clock} \times \text{Core/Bus ratio} \\
 & &= & 66\text{MHz} \times 4 \\
 & &= & 266\text{MHz}
 \end{aligned}$$

SW1				CPU
1	2	3	4	Core/Bus Ratio
ON	OFF	ON	ON	2.5
ON	ON	OFF	ON	3
ON	OFF	OFF	ON	3.5
ON	ON	ON	OFF	4
ON	OFF	ON	OFF	4.5
ON	ON	OFF	OFF	5
ON	OFF	OFF	OFF	5.5
OFF	ON	ON	ON	6
OFF	OFF	ON	ON	6.5
OFF	ON	OFF	ON	7
OFF	OFF	OFF	ON	7.5
OFF	ON	ON	OFF	8

**2.1-3 CPU Speed Setting: SW1**

To adjust the speed of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU spec.*). Then look at **Table 2.1 (200 ~ 333MHz Intel® Pentium® II/Celeron™ processor)** for setting.

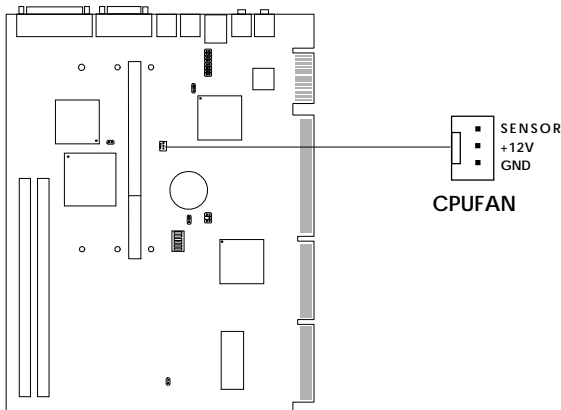


**Table 2.1 200 ~ 333MHz Intel® Pentium® II/Celeron™ processor**

CPU Type	SW1
200MHz	
233MHz	
266MHz	
300MHz	
333MHz	

### 2.1-4 Fan Power Connector: CPUFAN

This connector support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard had a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

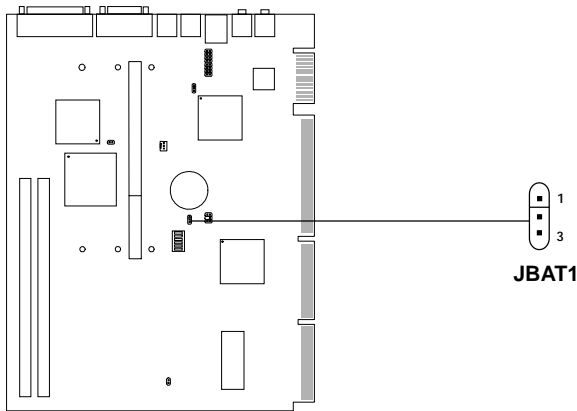


**Note:** For fans with speed sensor, every rotation of the fan will send out 2 pulses. System Hardware monitor will count and report the fan rotation speed.



## 2.2 Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. If you use the on-board battery, you must short 1-2 pins of JBAT1 to keep the CMOS data.

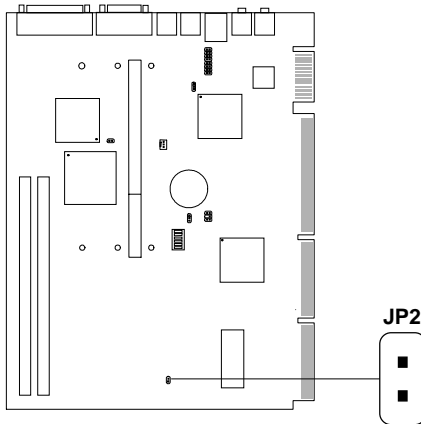


JBAT1	Function
	Keep Data
	Clear Data



**Note:** You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. To be able to clear the CMOS, you need to unplug the power plug of the system, because there's a 3V standby power for PIIX4 chipset which is provided by the power supply. Otherwise, the CMOS will not be cleared.

### 2.3 Power On Mode Jumper: JP2

The mainboard supports two kinds of system power on: the Boot-Up by switch and the Immediate Boot-Up. With the Boot-Up by Switch, the system will boot up only when the power on switch is pressed. For Immediate Boot-Up, the system will boot up instantly when the power connector is connected into the system.



**Table 2.3: Power On Mode Feature**

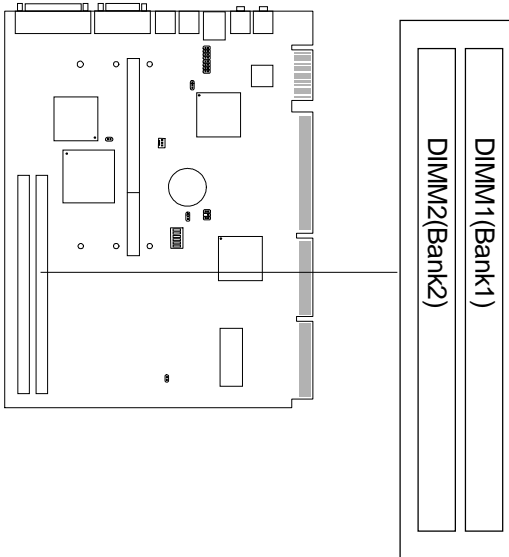
JP2	Feature
	Select Boot-Up by Switch
	Select Immediate Boot-Up

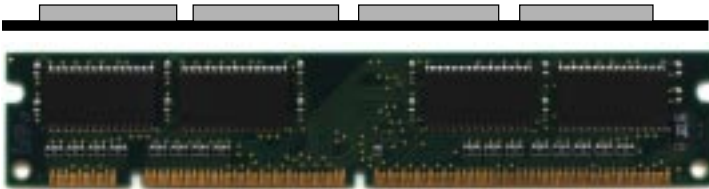
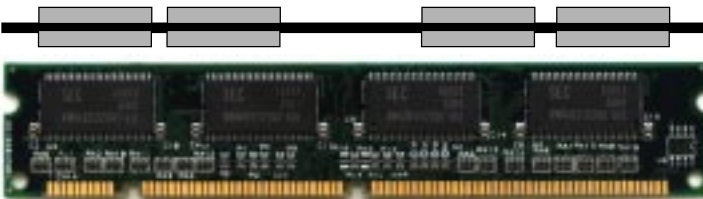
**Note:** Short **JP2**, when using Boot-Up by Switch feature. Open **JP2**, to enable Immediate Boot-Up.

## 2.4 Memory Installation

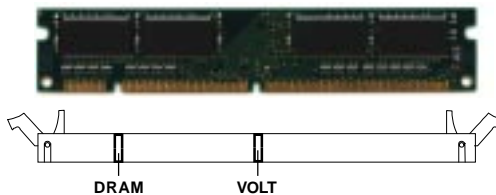
### 2.4-1 Memory Bank Configuration

The mainboard supports a maximum of 512MB of memory : It provides two 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 128 Mbytes DIMM memory module. The memory module can be either EDO (Extended Data Output), and SDRAM(Synchronous DRAM) MODEDRAM.



**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 “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. The plastic clip at the side of the DIMM slot will automatically close.

**2.4-3 Memory Population Rules**

1. To operate properly, at least one 168-pin DIMM module must be installed. This mainboard supports Table Free memory, so memory can be installed on (DIMM1) or (DIMM2).
2. Use only a 3.3v unbuffered DIMM.
3. Supports EDO and SDRAM DIMM.
4. The DRAM addressing and the size supported by the mainboard is shown next page.

**Table 2.4-1 EDO DRAM Memory Addressing**

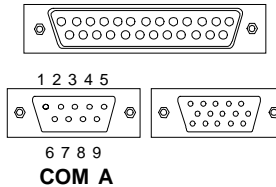
DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/SIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
4M	1Mx4	SYMM	10	10	4MBx8	8MBx16
16M	1Mx16	SYMM	10	10	4MBx2	8MBx4
	1Mx16	ASYM	12	8	4MBx2	8MBx4
	2Mx8	ASYM	11	10	8MBx4	16MBx8
	2Mx8	ASYM	12	9	8MBx4	16MBx8
	4Mx4	SYMM	11	11	16MBx8	32MBx16
	4Mx4	ASYM	12	10	16MBx8	32MBx16
64M	2Mx32	ASYM	11	10	8MBx1	16MBx2
	2Mx32	ASYM	12	9	8MBx1	16MBx2
	2Mx32	ASYM	13	8	8MBx1	16MBx2
	4Mx16	SYMM	11	11	16MBx2	32MBx4
	4Mx16	ASYM	12	10	16MBx2	32MBx4
	8Mx8	ASYM	12	11	32MBx4	64MBx8
	16Mx4	SYMM	12	12	64MBx8	128MBx16

**Table 2.4-2 SDRAM Memory Addressing**

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	11	8		
	4Mx16	ASYM	12	8		
	8Mx8	ASYM	12	9		
	16Mx4	ASYM	12	10		

## 2.5 Serial Port Connector: COM A

The mainboard provides a 9-pin male DIN connector for serial port COM A. This port is a 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.

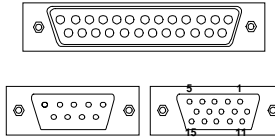


### PIN DEFINITION

PIN	SIGNAL
1	<b>DCD</b> (Data Carry Detect)
2	<b>SIN</b> (Serial In or Receive Data)
3	<b>SOUT</b> (Serial Out or Transmit Data)
4	<b>DTR</b> (Data Terminal Ready)
5	<b>GND</b>
6	<b>DSR</b> (Data Set Ready)
7	<b>RTS</b> (Request To Send)
8	<b>CTS</b> (Clear To Send)
9	<b>RI</b> (Ring Indicate)

**2.6 VGA DB 15 Pin Connector**

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



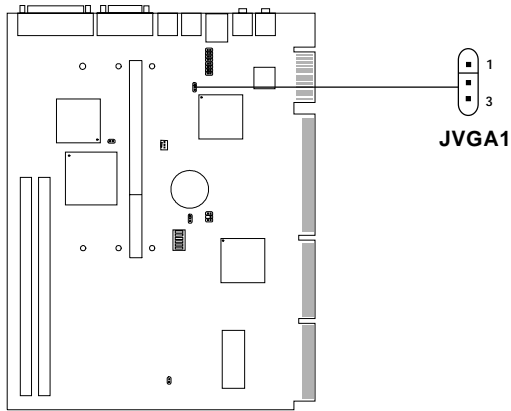
**VGA**

<b>Analog Video Display Connector(DB15-S)</b>	
<b>Pin</b>	<b>Signal Description</b>
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

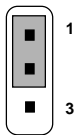


## **2.7 VGA Enable/Disable Jumper: JVGA1**

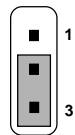
This jumper is used to Enabled/Disabled the onboard VGA chip.



**JVGA1**



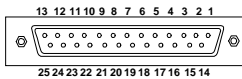
**Enabled**



**Disabled**

## 2.8 Parallel Port Connector: LPT

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP). See connector and pin definition below:



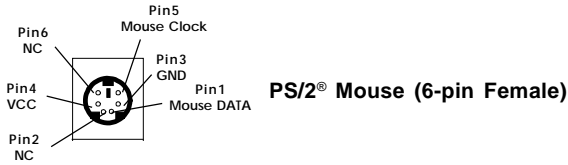
**LPT**

### PIN DEFINITION

PIN	SIGNAL	PIN	SIGNAL
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	FE	25	GND
13	SELECT		

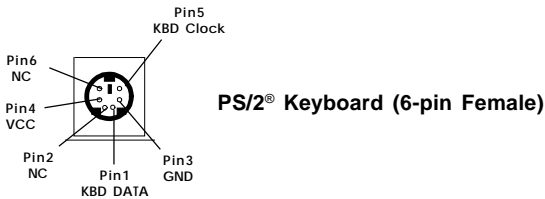
## 2.9 Mouse Connector

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



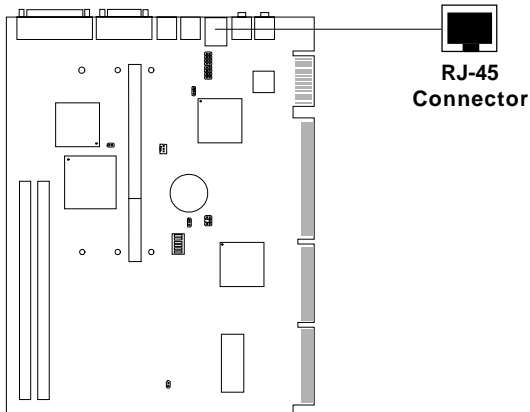
## 2.10 Keyboard Connector

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



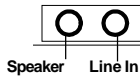
## 2.11 LAN Connector

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



## 2.12 Audio Port Connectors

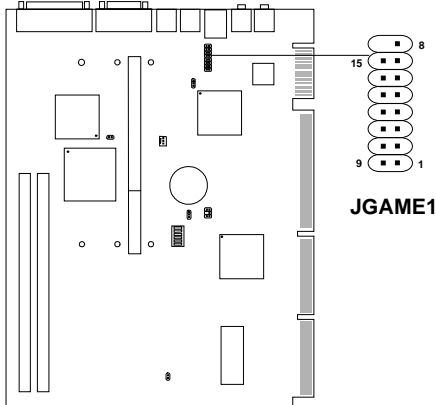
**Speaker** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices.



### 1/8" Stereo Audio Connectors

**2.13 Joystick/Midi Connector: JGAME1**

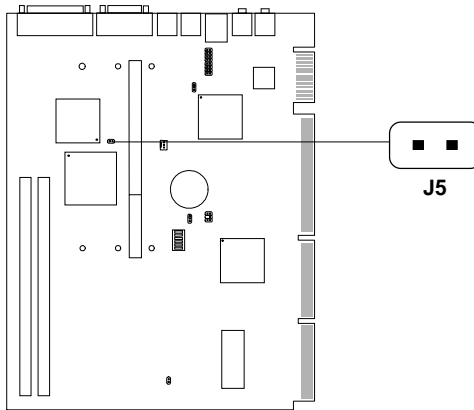
You can connect MIDI keyboard, joystick or game pads to this connector.



PIN	SIGNAL
1	+5v
2	Joystick But0
3	Joystick X1
4	GND
5	GND
6	Joystick Y1
7	Joystick But1
8	+5v
9	+5v
10	Joystick But2
11	Joystick X2
12	Midi Out
13	Joystick Y2
14	Joystick But3
15	Midi In

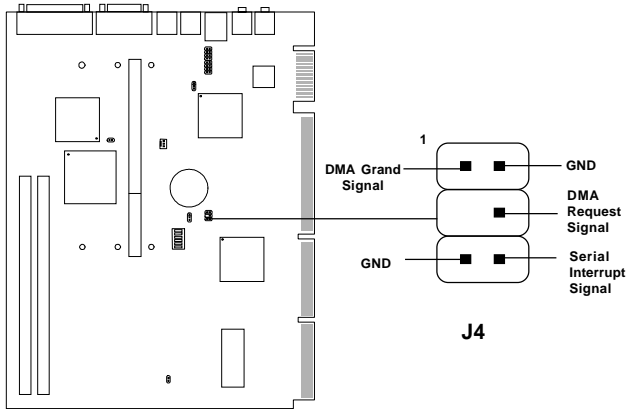
## 2.14 CPU Temperature Sensor: J5 (optional)

This is used to check the CPU temperature. The JSOR1 is a sensor that is placed near the processor heatsink. This will monitor the CPU temperature.



## **2.15 SB\_Link™ Card Sound Connector: J4**

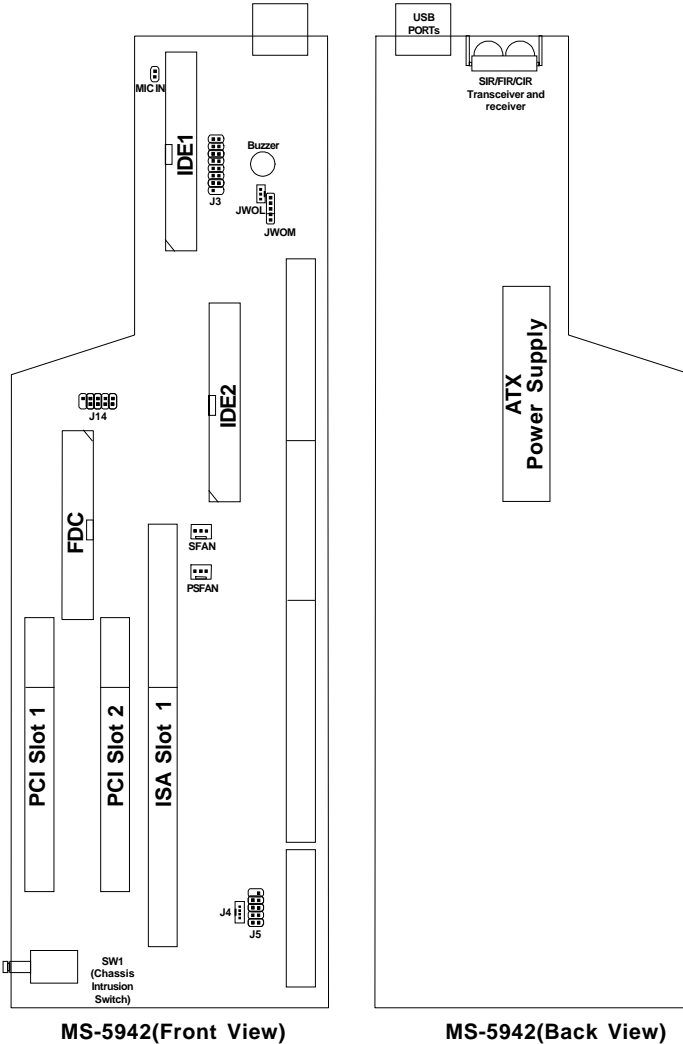
The mainboard provides a distributed DMA connector for PCI sound card with this feature, such as Creative® PCI 3D sound card.





**2.16 MS-5942 Riser Card (Optional)**

The MS-5942 Riser card is used with MS-6125 mainboard.

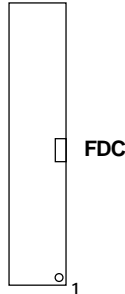


**MS-5942(Front View)**

**MS-5942(Back View)**

**2.16-1 Floppy Disk Connector: FDC**

The mainboard also provides a standard floppy disk connector FDC that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.

**2.16-2 External Audio Jack Connector: J5 (reserved)**

This connector is used for Audio-Jacks such as: Speaker, Line-In, and Mic.

**2.16-3 2mm CD-ROM Input Connector: J4**

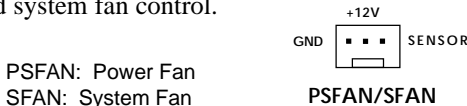
J4 is used as a CD Line-in connector. Connect the audio cable provided by the CD-ROM.

**2.16-4 Chassis Intrusion Switch: SW1**

The Switch is used to monitor any intrusion on the system. If the Chassis is open, the switch will be turn on. The system will record this status. To clear the warning, you must enter the BIOS setting and clear the status.

### 2.16-5 Power/System Fan Connector: PSFAN/SFAN

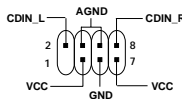
This connector support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard had a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the power and system fan control.



**Note:** For fans with speed sensor, every rotation of the fan will send out 2 pulses. System Hardware monitor will count and report the fan rotation speed.

### 2.16-6 CD-ROM Power/Audio In Connector: J14

This connector is connected to the MS5943 CDIN. The MS5943 should be connected at the back of the CD-ROM. The MS5943 contains an IDE connector and a CDIN connector.



### 2.16-7 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33 function. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2. These connectors support the provided IDE hard disk cable.

#### IDE1(Primary IDE Connector)

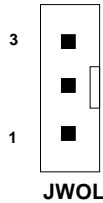
The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

#### IDE2(Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

### 2.16-8 Wake On LAN Connector: JWOL

The JWOL connector is for use with LAN add-on cards that supports Wake Up on LAN function.



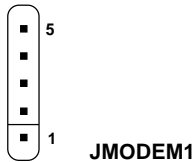
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

**Note:** LAN wake-up signal is active “high”.

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(750 ma power supply with 5V Stand-by)

**2.16-9 Modem Wake Up Connector: JWOM**

The JWOM connector is for used with Modem add-on card that supports the Modem Wake Up function. To use this function you need to set the “Resume By Ring” to enable at the BIOS Power Management Setup.



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

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

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(750 ma power supply with 5V Stand-by)

**2.16-10 Microphone Connector: MIC IN**

Connect the Microphone connector from the Front panel into this Connetor.

**2.16-11 USB Ports**

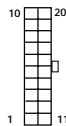
The mainboard provides a **UHCI(Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



PIN	SIGNAL
1	VCC
2	-Data0
3	GND
4	+Data0

**2.16-12 ATX 20-pin Power Connector: JPWR1**

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard. This power connector supports instant power on function which means that system will boot up instantly when the power connector is inserted on the board.



**ATX Power Connector**

**PIN DEFINITION**

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

**Warning:** Since the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power connector to ensure that no damage will be done.

**2.16-13 IrDA Infrared Module Sensor: SIR/FIR/CIR**

The mainboard provides IR sensor. This is an optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function.

**2.16-14 Case Connector: J3**

This connector support the cable connected to the LED board bracket.

## Chapter 3

### MS-6201 CHASSIS INSTALLATION GUIDE

#### 1. Overview

The MS-6201 MICRO NLX is a specially designed chassis for MS-6125 mainboard. The chassis can accommodate one Floppy drive, Hard drive, and Slim Type CD-ROM. The chassis back panel support one VGA, Network(UTP), Speaker, Line-in, LPT, PS/2<sup>®</sup> mouse and keyboard.

#### 2. Installation Tools

Tools you need before you start:

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

#### 3. Screw

Two types of screws are provided by the MS-6201 MICRO NLX case: Flat head screw and Screw w/washer.



Flat Head

This type of screw is used to mount the mainboard into the Case.



Screw w/  
Washer

This type of screw is used to mount the Floppy Drive, CD-ROM Drive, and Hard Drive into the Case.



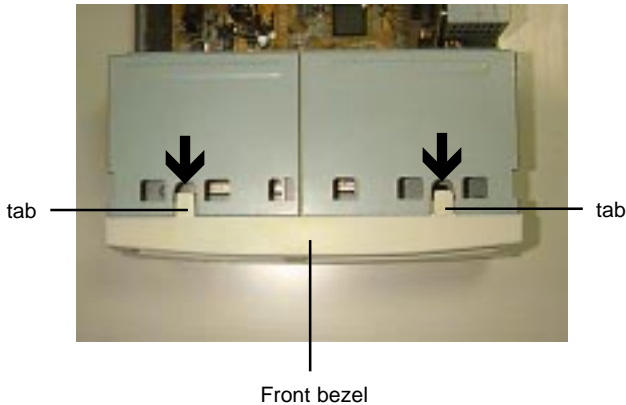
## 4. Installation Procedure

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



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

**Step 2:** Detach the front bezel.



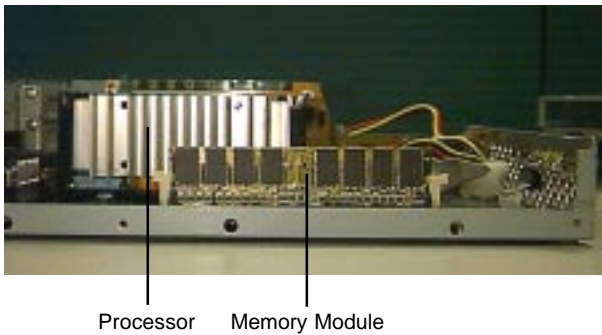
Remove the front bezel by releasing the two upper tabs.

**Step 3:** Remove the cage



To remove the cage, pull the cage upward.

**Step 4:** Insert the processor and the memory module.

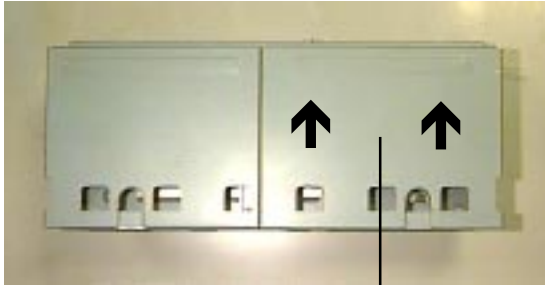


To install the processor and the memory module. (refer to Chapter2)

**Step 5:** Connect the cable from the LED board into MS-5942 (J3).

**Step 6:** Connect the cable from the MIC into MS-5942 (MIC IN).

**Step 7:** Remove the CD-ROM cage.



CD-ROM cage

Remove the CD-ROM cage by sliding it backwards.

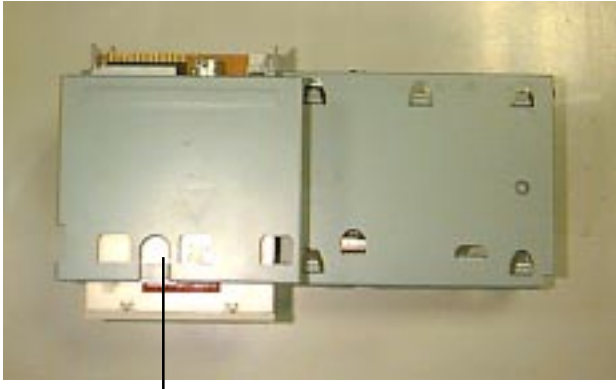
**Step 8:** Hard Drive



Hard Drive

Turn the cage over.

- look for a mark under the cage, this will show the position of the hard drive.
- Secure the Hard Drive into the cage with screw.
- Connect the 40-pin IDE Cable from the Hard Drive into MS-5942 primary IDE connector. Pin 1 is indicated by a red mark on the cable.
- Insert the 4-pin power connector from the power supply into the hard drive power socket.

**Step 9: 3.5" Floppy Drive**

Floppy Drive

- Insert the floppy drive into the cage.
- Secure the floppy drive into the cage with screws.
- Connect the 34-pin floppy cable from the floppy drive into the MS-5942 FDD connector. 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.

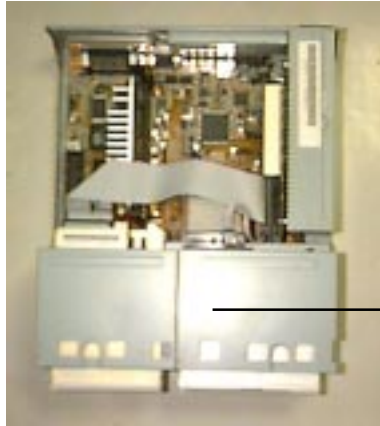
**Step 10: Slim Type CD-ROM**

Insert two plastic adapter into the MS-5943.



- Insert the Slim type CD-ROM into the CD-ROM cage. Secure the slim type CD-ROM into the CD-ROM cage with the screws. Don't tighten the screw for it might damage the slim type CD-ROM.
- Connect the MS-5943 into the CD-ROM connector. Secure it with a screw. Don't tighten the screw. It might damage the CD-ROM.
- Install the CD-ROM cage back into the cage.
- Connect the 40-pin IDE cable from the CD-ROM drive into MS-5942 secondary IDE connector. Pin 1 is indicated by red wire on the cable.
- Connect the CDIN from MS-5943 into the MS-5942 J14 to supply the CD-ROM with power and audio.

**Step 11:** Put back the cage set.



Cage Set

Be sure to connect the cable and the power connector.

**Step 12:** Attach the front bezel.



front bezel

**Step 13:** Close the chassis cover



Slide the cover forward till position, then screw to secure the cover.



The installation is now completed.



## **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> immediately to allow you to enter Setup. The other way to enter Setup is to power on the computer. When the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

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>.



**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.

**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 function is reserved for System Hardware Monitor.

**Integrated Peripherals**

Change, set, or disable onboard I/O, IRQ, and DMA assignement.

**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.

### 3.4 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 (2A69JM49)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.**

Date(mm:dd:yy): Fri, Feb 28,1997							
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>MODEHDD</b>	access mode





**None** (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

**Both/Trend/  
Award** 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 external cache is built in the processor.

### CPU External Cache

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

### CPU L2 Cache ECC Checking

Choose Enabled or Disabled. This option enables the level 2 cache memory ECC(error check correction). Using 66MHz CPU BUS Deschutes processor, set to Enabled or Disabled. For 100MHz CPU BUS Deschutes processor, always set to Enabled. Klamath processor always set to Disabled.

### 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 From LAN First**

During Enabled, the system will boot from the LAN card onboard (if there's any) first.

**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. Take 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. There will be no warning message if the drive installed is 360K.

**Boot Up NumLock Status**

The default value is On.

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

**Off** Keypad is arrow keys.

**Gate A20 Option**

**Normal** The A20 signal is controlled by keyboard controller or chipset hardware.

**Fast**(default) The A20 signal is controlled by port 92 or chipset specific method.

---

### 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 WIN 95**

This function is only used when you are testing SCT for Windows® 95 Logo.

**Video BIOS Shadow**

Determines whether video BIOS will be copied to RAM for faster execution. Video shadow will increase the video performance.

<b>Enabled</b> (default)	Video shadow is enabled
<b>Disabled</b>	Video shadow is disabled

**C8000 - CFFFF Shadow/E8000 - EFFFF Shadow**

Determines whether the optional ROM will be copied to RAM for faster execution.

<b>Enabled</b>	Optional shadow is enabled
<b>Disabled</b> (default)	Optional shadow is disabled

**Note:** For C8000-DFFFF optional-ROM on PCI BIOS , BIOS will automatically enable the shadow RAM. User does not have to select the item.

## 4.6 Chipset Features Setup

The Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Choose the “CHIPSET FEATURES SETUP” from the Main Menu and the following screen will appear.

```

ROM PCI/ISA BIOS(2A69JM4A)
CMOS SETUP UTILITY
CHIPSET FEATURES SETUP

```

Auto Configuration	: Enabled	Spread Spectrum Modulated	: Enabled
DRAM Speed Selection	: 60ns		
MA Wait State	: Slow		
EDO RAS# To CAS# Delay	: 3		
EDO RAS# Precharge Time	: 3		
EDO DRAM Read Burst	: x333		
EDO DRAM Write Burst	: x222		
CPU-to PCI IDE Posting	: Enabled		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 1		
16 Bit I/O Recovery Time	: 1		
Memory Hole At 15M-16M	: Disabled		
Passive Release	: Enabled		
Delayed Transaction	: Disabled	Esc : Quit	↑ ↓ → ← : Select item
AGP Aperture Size (MB)	: 64	F1 : Help	PU/PD/+/- : modify
SDRAM RAS-To-CAS Delay	: Slow	F5 : Old Value(Shift)	F2 : Color
SDRAM RAS Precharge Time	: Slow	F7 : Load Setup Defaults	
SDRAM CAS Latency Time	: 3		

**Note:** Change these settings only if you are familiar with the chipset.

### **Auto Configuration**

Choosing Enabled (default) will automatically configure chipset features using default settings. Choose Disable to customize setup.

### **DRAM Speed Selection**

The DRAM timing is controlled by the DRAM Timing Registers. The timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory.

<b>60ns</b>	DRAM Timing Type.
<b>50ns</b>	DRAM Timing Type.

### **MA Wait State**

This item allows you to select MA Wait State. The settings are Fast or Slow.

### **EDO RAS# To CAS# Delay**

This sets the relative delay between the row and column address strobes from DRAM (EDO). The settings are 2 or 3.

### **EDO RAS# Precharge Time**

Defines the length of time for Row Address Strobe from DRAM (EDO) is allowed to precharge. The settings are 3 or 4.

### **EDO DRAM Read Burst**

This sets the timing for burst mode reads from DRAM(EDO). Burst Read and write requests are generated by the CPU in four separate parts. The lower the timing numbers, the faster the system will address memory.

x222	Read DRAM (EDO) timings are 2-2-2
x333	Read DRAM (EDO) timings are 3-3-3

### **EDO DRAM Write Burst**

This sets the timing for burst mode writes from DRAM (EDO). Burst read and write requests are generated by the CPU in four separate parts. The lower the timing numbers, the faster the system will address memory.

x222	Write DRAM timings are 2-2-2-2
x333	Write DRAM timings are 3-3-3-3

### **CPU-To-PCI IDE Posting**

Select Enabled to post write cycles from the CPU to the PCI IDE interface. IDE accesses are posted in the CPU to PCI buffers, cycle optimization. The settings are Enabled or Disabled.

### **System BIOS Cacheable**

Select Enabled allows caching of the system BIOS ROM at F000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

<b>Enabled</b>	BIOS access cached
<b>Disabled</b>	BIOS access not cached

### **Video BIOS Cacheable**

Select Enabled allows caching of the system BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

<b>Enabled</b>	Video BIOS access cached
<b>Disabled</b>	Video BIOS access not cached

### **Video RAM Cacheable**

Select Enabled allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

### **8 Bit I/O Recovery Time**

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This items allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

### **16 Bit I/O Recovery Time**

This items allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

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

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

### **Passive Release**

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM. The settings are Enabled or Disabled.

### **Delayed Transaction**

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

### **AGP Aperture Size (MB)**

Select the size the of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.



**SDRAM RAS-to-CAS Delay**

This item allows you to select SDRAM RAS-to-CAS Delay. The settings are Fast or Slow.

**SDRAM RAS Precharge Time**

This item allows you to select SDRAM RAS Precharge Time. The settings are Fast or Slow.

**SDRAM CAS Latency Time**

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

**Spread Spectrum Modulated**

This item allow you to select the clock generator Spread Spectrum function. The default is enabled.

## 4.7 Power Management Setup

The Power Management Setup will appear on your screen like this:

ROM PCI/ISA BIOS (2A69JM4A)  
 POWER MANAGEMENT SETUP  
 AWARD SOFTWARE, INC.

ACPI Function	: Enabled	IRQ 8 Break Suspend	: Disabled
Power Management	:User Define	** Reload Global Timer Events **	
PM Control by APM	:Yes	IRQ [3-7,9-15],NMI	: Disabled
Video Off Method	:DPMS	Primary IDE 0	: Enabled
Video Off After	:Standby	Primary IDE 1	: Enabled
Modem Use IRQ	: 3	Secondary IDE 0	: Disabled
Doze Mode	:Disabled	Secondary IDE 1	: Disabled
Standby Mode	:Disabled	Floppy Disk	: Disabled
Suspend Mode	:Disabled	Serial Port	: Enabled
HDD Power Down	:Disabled	Parallel Port	: Disabled
Throttle Duty Cycle	:62.5%		
VGA Active Monitor	:Disabled		
Soft-Off by PWR-BTTN	:Instant-Off		
CPUFAN Off in Suspend	:Enabled		
Resume by Ring	:Disabled		
Restore AC/Power Loss	:Power On		
Resume by Alarm	:Disabled		
		Esc : Quit    ↑↓→← : Select item	
		F1 : Help PU/PD/+/- : modify	
		F5 : Old Value(Shift) F2 : Color	
		F7 : Load Setup Defaults	

### Power Management

This category determines the power consumption for system after selecting below items. Default value is Disable. The following pages tell you the options of each item & describe the meanings of each options.

**ACPI Function**

During Enabled, this will support ACPI function.

**Power Management**

<b>Disable</b>	Global Power Management will be disabled.
<b>User Define</b>	Users can configure their own power management.
<b>Min Saving</b>	Pre-defined timer values are used such that all timers are in their MAX value.
<b>Max Saving</b>	Pre-defined timer values are used such that all timers are in their MIN value.

**PM Control by APM**

<b>No</b>	System BIOS will ignore APM when power managing the system.
<b>Yes</b>	System BIOS will wait for APM's prompt before it enter any PM mode

**Note :**Enable this for O.S. with APM like Windows® 95, Windows® NT, etc.

**Video Off Method**

<b>Blank Screen</b>	The system BIOS will only blank off the screen when disabling video.
<b>V/H SYNC+Blank</b>	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals from VGA card to monitor.
<b>DPMS</b>	This function is enabled only for VGA card supporting DPMS.

**Note:** Green monitors detect the V/H SYNC signals to turn off its electron gun.

**Video Off After**

The settings are N/A, Standby, Doze, or Suspend. This option is for choosing the setting in which the monitor will turn off.

**N/A** Always turn on.

**Doze** During Doze mode, the monitor will be turned off.

**Standby** During Standby mode, the monitor will be turned off.

**Suspend** During Suspend mode, the monitor will be turned off.

The default setting is Standby.

**MODEM Use IRQ**

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. The settings are NA, 3, 4, 5, 7, 9, 10, or 11.

**Doze Mode**

**Disable** System will never enter DOZE mode.

**1 Min/2 Min/4 Min/8 Min/** Defines the continuous idle time before the system enters DOZE mode.

**12 Min/20 Min/30 Min/40 Min/1 Hr** If any item defined in the options of “Power Down and Resume events” is enabled & active, DOZE timer will be reloaded. When the system have entered Doze mode, any of the items enabled in “Wake Up Events in Doze and Standby” will trigger the system to wake up.

**Standby Mode**

**Disable** System will never enter STANDBY mode.

- 1 Min/2 Min/** Defines the continuous idle time before the  
**4 Min/8 Min/** system enters STANDBY mode.  
**12 Min/20 Min/** If any item defined in the options of “Power  
**30 Min/40 Min/** Down and Resume events” is enabled & active,  
**1 Hr** STANDBY timer will be reloaded. When the  
system has entered Standby mode , any of the  
items that are enabled in “Wake Up Events of  
Doze and Standby” will trigger the system to  
wake up.

**Suspend Mode**

**Disable** System will never enter SUSPEND mode.

- 1 Min/2 Min/** Defines the continuous idle time before the  
**4 Min/8 Min/** system enters SUSPEND mode.  
**12 Min/20 Min/** If any item defined in the options of “Power  
**30 Min/40 Min/** Down & Resume Events” is enabled & active,  
**1 Hr** SUSPEND timer will be reloaded. When the  
system has entered SUSPEND mode, any of the  
items enabled in the “Power Down & Resume  
Events” will trigger the system to wake up.

**HDD Power Down**

**Disable** HDD’s motor will not shut off.

- 1 Min/2 Min/** Defines the continuous HDD idle time before  
**3 Min/4 Min/** the HDD enters the power saving mode (motor  
**5 Min/6 Min/** off). BIOS will turn off the HDD’s motor when  
**7 Min/8 Min/** time is out.  
**9 Min/10 Min/**  
**11 Min/12 Min/**  
**13 Min/14 Min/**  
**15 Min**
-

**Throttle Duty Cycle**

This option will determine how much power will be used by the CPU , if the system goes into suspend mode.

**VGA Active Monitor**

During Enabled, if there's no activity in the monitor screen the system will go into Power Saving Mode. During Disabled, the system will go into Power Saving Mode, whether there is activity in the monitor screen or not. The settings are Disabled and Enabled.

**Soft-Off by PWR-BTTN**

The settings are Delay 4 sec or Instant-off. During Delay 4 sec, if you push the switch one time, the system goes into suspend mode and if you push it more than 4 second, the system will be turned off. During instant-off, the system will turn off once you push the switch.

**CPUFAN Off in Suspend**

During Enabled, if the system goes into suspend mode, the CPU fan will stop. During Disabled, if the system goes into suspend mode the CPU fan will resume. This function is only available for System Hardware Monitor Chipset.

**Resume by Ring**

During Disabled, the system will ignore any incoming call from the modem or LAN. During Enabled, the system will boot up if there's an incoming call from the modem or LAN.

**Note:** If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work.

**Restore on AC/Power Loss**

The settings are power on or last status. During power on, after every AC power loss, the system will be turned on. During last status, after every AC power loss, whatever the system status, it will be the same when the AC power returns.

---

**Resume by Alarm**

This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

<b>Date(of month) Alarm</b>	You can choose which month the system will boot up. Set to 0, to boot every month.
<b>Time(hh:mm:ss) Alarm</b>	You can choose what hour, minute and second 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, before this function will work.

**IRQ 8 Break Suspend**

You can Enable or Disable monitoring of IRQ 8 so it does not awaken the system from suspend mode.

**Reload Global Timer Events**

<b>IRQ[3-7,9-15], NMI</b>	<b>: Disabled</b>
<b>Primary IDE 0</b>	<b>: Enabled</b>
<b>Primary IDE 1</b>	<b>: Enabled</b>
<b>Secondary IDE 0</b>	<b>: Disabled</b>
<b>Secondary IDE 1</b>	<b>: Disabled</b>
<b>Floppy Disk</b>	<b>: Disabled</b>
<b>Serial Port</b>	<b>: Enabled</b>
<b>Parallel Port</b>	<b>: Disabled</b>

During Enabled, any event occurring on each device listed above will restart the global timer for Standby Mode.

## 4.8 PNP/PCI Configuration Setup

You can manually configure the PCI Device's IRQ. The following pages tell you the options of each item & describe the meanings of each options.

**ROM PCI/ISA BIOS (2A69JM4A)**  
**PNP/PCI CONFIGURATION SETUP**  
**AWARD SOFTWARE, INC.**

PnP OS Installed	:No	PCI IDE IRQ Map To	: PCI-Auto
Resources Controlled By	:Manual	Primary IDE INT#	: A
Reset Configuration Data	:Disabled	Secondary IDE INT#	: B
IRQ-3 assigned to	:Legacy ISA	Assign IRQ for VGA	: Enabled
IRQ-4 assigned to	:Legacy ISA	Assign IRQ for USB	: Enabled
IRQ-5 assigned to	:PCI/ISA PnP	Used MEM base addr	: N/A
IRQ-7 assigned to	:PCI/ISA PnP		
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	:PCI/ISA PnP		
IRQ-15 assigned to	:PCI/ISA PnP		
DMA-0 assigned to	:PCI/ISA PnP		
DMA-1 assigned to	:PCI/ISA PnP	Esc : Quit	↑↓→← : Select item
DMA-3 assigned to	:PCI/ISA PnP	F1 : Help	FU/PD/+/- : modify
DMA-5 assigned to	:PCI/ISA PnP	F5 : Old Value(Shift)	F2 : Color
DMA-6 assigned to	:PCI/ISA PnP	F7 : Load Setup Defaults	
DMA-7 assigned to	:PCI/ISA PnP		

### 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 the PnP cards. So, for non-PnP operating system (DOS, Netware®), this option must set to NO.



**Resources Controlled By**

By Choosing “Auto”, the system BIOS will detect the system resource and automatically assign the relative IRQ and DMA Channel for each peripheral.

By Choosing “Manual”(default), the user will need to assign IRQ & DMA for add-on cards. Be sure that there is no conflict for IRQ/DMA and I/O ports.

**Note:** When choosing “Auto” you must be sure that all of the system add-on cards are PnP type.

**Reset Configuration Data**

The system BIOS supports the PnP feature so the system needs to record which resource is assigned and protect resources from conflict. Every peripheral device has a node which is called ESCD. This node records which resources are assigned to it. The system needs to record and update ESCD to the memory locations. These locations (4K) are reserved at the system BIOS.

If Disabled (default) is chosen the system’s ESCD will update only when the new configuration varies from the last one.

If Enabled is chosen the system will be forced to update the system’s ESCD. Then, this option will be auto-set to Disable.

IRQ-3 assigned to : Legacy ISA  
IRQ-4 assigned to : Legacy ISA  
IRQ-5 assigned to : PCI/ISA PnP  
IRQ-7 assigned to : PCI/ISA PnP  
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 : PCI/ISA PnP

IRQ-15 assigned to : PCI/ISA PnP  
DMA-0 assigned to : PCI/ISA PnP  
DMA-1 assigned to : PCI/ISA PnP  
DMA-3 assigned to : PCI/ISA PnP  
DMA-5 assigned to : PCI/ISA PnP  
DMA-6 assigned to : PCI/ISA PnP  
DMA-7 assigned to : PCI/ISA PnP

The above settings will be shown on the screen only if “Manual” is chosen for the *Resources Controlled By* function.

Legacy is the term which signifies that a resource is assigned to the ISA Bus and provides for non PnP ISA add-on card. PCI/ISA PnP signifies that a resource is assigned to the PCI Bus or provides for ISA PnP add-on cards and peripherals.

### PCI IDE IRQ Map To

- PCI-Auto:** This setting is for off-board PCI IDE card and is fully compatible with PCI specifications.
- PCI-Slot 1-4:** This setting is used if off-board PCI IDE card is not fully compatible with PCI specifications. You must specify which PCI slot the PCI IDE Card is installed in.
- ISA:** This setting is used if the off-board PCI IDE card uses an edge trigger and IRQ routes directly to the ISA Bus.

**Note:** The user will need to disable the on-board on-chipset PCI IDE controller when installing off-board PCI IDE add-on cards. (See the INTEGRATED PERIPHERALS SETUP) These two options choose the primary and secondary IDE Channel interrupts when the user installs off-board PCI IDE add-on cards.

**Assign IRQ for VGA**

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

**Assign IRQ for USB**

Set to Enabled when USB port will be used. Set to Disable if the USB port will not be used.

**Used MEM base addr**

Lets the user choose the Legacy ISA addr. The settings are NA#, C800, CC00, D000, D400, D800 OR DC00.

**Used MEM Length**

Select a length for the memory area specified in the previous field. The setting are 8K, 16K, 32K, or 64K.

## **4.9 Load 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 (optional)

This Special Features Setup are use by System Hardware Monitor chipset. You can manually change the value of each option.

ROM PCI/ISA BIOS (2A69JM49)  
 INTEGRATED PERIPHERALS  
 AWARD SOFTWARE, INC.

<pre> ***** POST SHOWING ***** Chassis Fan Detected      :Disabled Power Fan Detected       :Disabled CPU Fan Detected         :Enabled Chassis Intrusion Detect  :Disabled  Voltage Detected         :Enabled Vcore Voltage Detected   :Enabled +2.5V Voltage Detected   :Enabled +3.3V Voltage Detected   :Enabled +5.0V Voltage Detected   :Enabled + 12V Voltage Detected   :Enabled - 12V Voltage Detected   :Enabled -5.0V Voltage Detected   :Enabled                 </pre>	<pre> ***** SYSTEM MONITOR *****  CPU Fan RPM              :6367 System Temperature      :26°C/78°F CPU Temperature          :28°C/82°F CPU Critical Temp       :Disabled Shutdown Temp           :Disabled  Esc : Quit      ↑↓→←: Select item F1  : Help PU/PD/+/- : modify F5  : Old Value(Shift) F2 : Color F6  : Load BIOS Defaults F7  : Load Setup Defaults                 </pre>
---	--

**Chassis Fan Detected/Power Fan Detected/CPU Fan Detected/Voltage Detected/Vcore Voltage Detected/+2.5V Voltage Detected/+3.3V Voltage Detected/+5.0 Voltage Detected/+12V Voltage Detected/-12V Voltage Detected/-5.0 Voltage Detected**

During Enabled, this will show the CPU/FAN voltage chart during system boot up. And during Disabled, this will not show.

**Chassis/Power/CPU Fan RPM**

During Enabled, this will monitor the RPM of your CPU/Chassis/Power fan.

**System Temperature/CPU Temperature**

This will show the System and CPU temperature.

**CPU Critical Temp**

This option is for setting the critical temperature level for the processor. When the processor reaches the temperature you set, this will reduce the load on the processor.

**Shutdown Temp**

This option is for setting the Shutdown temperature level for the processor. When the processor reaches the temperature you set, this will shutdown the system. This function only works with Windows® 95 operating system.

**Chassis Intrusion Detect**

Set this option to Enabled, Reset, or Disabled the chassis intrusion detector. During Enabled, any intrusion on the system chassis will be recorded. The next time you turn on the system, it will show a warning message. To be able to clear those warning, choose Reset. After clearing the message, it will go back to Enabled.

## 4.11 Integrated Peripherals

ROM PCI/ISA BIOS (2A69IM4A)  
 INTEGRATED PERIPHERALS  
 AWARD SOFTWARE, INC.

IDE HDD Block Mode : Enabled	
IDE Primary Master PIO : Auto	
IDE Primary Slave PIO : Auto	
IDE Secondary Master PIO : Auto	Onboard Parallel Port : 378/IRQ7
IDE Secondary Slave PIO : Auto	Parallel Port Mode : SPP
IDE Primary Master UDMA : Auto	
IDE Primary Slave UDMA : Auto	
IDE Secondary Master UDMA: Auto	
IDE Secondary Slave UDMA : Auto	Onboard Audio Chip : Enabled
On-Chip Primary PCI IDE : Enabled	
On-Chip Secondary PCI IDE: Enabled	
USB Keyboard Support : Disabled	
Init Display First : PCI Slot	
Onboard Sound : 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
Onboard IR Controller : Disabled	F5 : Old Value(Shift) F2 : Color
	F7 : Load Setup Defaults

### IDE HDD Block Mode

**Enabled/Disabled** Enabled allows the Block mode access for the IDEHDD.

### IDE Primary Master PIO

**Auto/Mode0/Mode1-4**

### IDE Primary Slave PIO

**Auto/Mode0/Mode1-4**

### IDE Secondary Master PIO

**Auto/Mode0/Mode1-4**

### **IDE Secondary Slave PIO** **Auto/Mode0/Mode1-4**

For these 4 IDE options, choose “Auto” to have the system BIOS auto detect the IDE HDD operation mode for PIO access.

**Note:** Some IDE HDD can not operate at the responding HDD’s mode. When the user has selected “Auto” and the system BIOS has accepted the HDD response mode, the user may degrade the HDD’s operation mode. Ex: IF the HDD reported it can operate in mode 4 but it is not operating properly, the user will have to manually change the operation mode to mode 3.

Choosing Mode 1-4 will have the system ignore the HDD’s reported operation mode and use the selected mode instead.

**Note:** According to ATA specs. Mode 4 transfer rate is > Mode 3 > Mode 2 > Mode 1 > Mode 0. If the user’s HDD can operate at Mode 3 the user can also select a slower Mode (i.e. Mode 0-2) but not a faster Mode (ie Mode 4).

### **On-Chip Primary PCI IDE** **Enabled/Disabled**

### **On-Chip Secondary PCI IDE** **Enabled/Disabled**

The system provides for a On-Board On-Chipset PCI IDE controller that supports Dual Channel IDE (Primary and Secondary). A maximum of 4 IDE devices can be supported. If the user install the Off-Board PCI IDE controller (i.e. add-on cards), the user must choose which channels will be disabled. This will depend on which channel will be used for the Off-Board PCI IDE add-on card.

**USB Keyboard Support****Enabled/Disabled**

Choosing Enabled will allow the system to use USB keyboard without a device driver.

**Onboard Sound****Enabled/Disabled**

Choosing Enabled will allow the system to use onboard sound. Choose Disabled, when using add-on sound card.

**Onboard FDD Controller****Enabled/Disabled**

The system has an on-board Super I/O chip with a FDD controller that supports 2 FDDs for 360K/720K/1.2M/1.44M/2.8M. Choose “Enabled” to use the on-board FDD controller for accessing the FDD. Otherwise choose “Disabled” to use the off-board FDD controller.

**Onboard Serial Port 1****Disabled/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)**



**Onboard Serial Port 2****Disabled/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)**

The system has an On-board Super I/O chipset with 2 serial ports. The On-board serial ports can be selected as:

**Disabled**

3F8/IRQ4	COM 1 uses IRQ4
2F8/IRQ3	COM 2 uses IRQ3
3E8/IRQ4	COM 3 uses IRQ4
2E8/IRQ3	COM 4 uses IRQ4

**Note:** Because the ISA Bus Interrupt accepts low to high edge trigger, the interrupt request line cannot be shared by multiple sources. If an off-board ISA add-on card with a serial port is installed the user may have to disable the on-board serial port because it will conflict with IRQ request line for the off-board serial port.

**Onboard IR Controller**

This item allow you to determine which Infra Red (IR) function of onboard I/O chip. If you choose IR function, the COM 2 will not function.

**Onboard Parallel Port****Disabled****(3BCH/IRQ7)/  
(278H/IRQ5)/  
(378H/IRQ7)**

There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

**Disable**

3BCH/IRQ7	Line Printer port 0
278H/IRQ5	Line Printer port 2
378H/IRQ7	Line Printer port 1

**Parallel Port Mode**

SPP : Standard Parallel Port

EPP : Enhanced Parallel Port

ECP : Extended Capability Port

To operate the onboard parallel port as StandardParallel Port only, choose “SPP.” To operate the onboard parallel port in the ECP and SPP modes simultaneously choose “ECP/SPP.” By choosing “ECP”, the onboard parallel port will operate in ECP mode only. Choosing “ECP/EPP” will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: “ECP Mode Use DMA” At this time the user can choose between DMA channels 3 or 1. The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: “EPP Mode Select.” At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

## 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

### ATI® 3D RAGE PRO/ATI® 3D RAGE IIC VGA DRIVER

#### 1. Overview

The ATI® 3D RAGE PRO/ATI® 3D RAGE IIC is a highly integrated graphics controllers. Incorporated within this single chips are the 2D, 3D, and video accelerators, palette DAC, and dual-clock synthesizer. This multi-function integrated controller delivers TV-quality scaled video optimized for MPEG playback, industry-leading mach64 2D performance.

##### 1.1 ATI® RAGE PRO Feature

- Support 2M or 4M SGRAM for 100MHz.
- Support AGP 2X BUS Up to 133MHz.
- Complete 3D primitive support: points, lines, triangles, strips, and quadrilaterals.
- 4K On-chip Texture Cache.
- 16-bit Z buffer.

##### 1.2 ATI® RAGE II C Feature

- Support 2M or 4M SGRAM for 83MHz.
- Support AGP 1X BUS Up to 66MHz.
- Complete 3D primitive support: points, lines, triangles, lists, strips, and quadrilaterals.
- Hidden surface removal using 16-bit Z-buffering.
- Support for single pass bi-and tri-linear texture filtering.

### 1.3 System Requirements

This section describes system requirements for the VGA Driver installation and Usage.

<b>Computer</b>	Intel® Pentium® II processor or higher
<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>	ATI® 3D RAGE II C/ATI® RAGE PRO
<b>VGA BIOS</b>	Version 1.01 or Higher

## 2. ATI® 3D VGA Driver Setup & Usage Procedures

Insert the CD-title into your CD-ROM drive. This CD will auto-run. This will display installation for VGA driver and sound driver. Also included are Norton® Anti-virus. Just click the button for automatic installation for VGA driver.

### 2.1 Windows® 95

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

- Step 1:** Insert the provided CD\_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD\_ROM drive, double click on the CD\_ROM icon. This will show the setup screen.
- Step 3:** Click on “ATI Installation” icon.
- Step 4:** This will show an ATI installation menu.
- Step 5:** Click on “Display Drivers”.
- Step 6:** Click “OK”.
- Step 7:** This will copy the VGA drivers into the hard drive.
- Step 8:** A message will appear stating you must restart the Windows® 95 system, select **yes** to restart.
- Step 9:** After restarting, Windows® 95 will show a new display setting.

**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 ATI Video Player for Windows 95**

- Step 1:** Insert the provided CD\_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD\_ROM drive, double click on the CD\_ROM icon. This will show the setup screen.
- Step 3:** Click on “ATI Installation” icon.
- Step 4:** This will show an ATI installation menu.
- Step 5:** Click on “ATI Video Player”.
- Step 6:** This will show “ATI Video Player Setup” icon.
- Step 7:** Click on “Finish”.
- Step 8:** This will copy the necessary files into the hard drive.
- Step 9:** After restarting, ATI setup is completed.

**Note:** Xing Software MPEG is incompatible with Windows® 95.



## 2.2 Windows® NT 4.0

**You need to install Windows® NT “Service Pack”, before you install Windows® NT driver.**

### 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 **CD-Title Disk** into CD-ROM Drive.
- Step 8:** When the Install from Disk dialog box appears, look for your CD-ROM drive: **:\VGAATI\NT40\ati.inf**.
- 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 Windows® NT 4.0.

**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 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.
- Step 7:** Click OK. If the display test screen was good and you select Yes, Windows® NT 4.0 will change the mode without restarting the system.

**2.3 AutoCAD, OS/2 and other application. Please refer to “On-Line Manual” in the CD-ROM. You need to install the “Acrobat Reader 3.01” program first.**

## Chapter 6

# AUDIO DRIVER

## 1. Overview

The YAMAHA YMF715E audio integrates OPL3, MPU401 MIDI interface, joystick port, and a 3D enhanced controller. This function is suitable for multimedia applications.

### 1.1 Features

- Support Sound Blaster game compatibility.
- Support Windows sound system compatibility.
- Full Duplex Operation.
- Built-in the 3D enhanced controller.
- Support Software Wave Table

### 1.2 System Requirements

This section describes system requirements for the Audio Driver installation and Usage.

<b>Computer</b>	Intel® Pentium® II processor or higher
<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>	YAMAHA YMF715E

## 2. Audio Driver Setup

Insert the CD-title into your CD-ROM drive. This CD will auto-run. This will display installation for VGA driver and sound driver. Also included are Norton® Anti-virus and LDCM (optional). Just click the button for automatic installation for audio driver.

### 2.1 Windows® 95

If you start Windows® 95 this will automatically detect this hardware onboard “OPL2-SA3 Sound Board” and “Gameport Joystick”. You need to click “Next”, then “Finish” do not click on the “Cancel”. The driver need these ID.

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

- Step 1:** Insert the provided CD\_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD\_ROM drive, double click on the CD\_ROM icon. This will show the setup screen.
- Step 3:** Click on “YAMAHA Sound Driver” icon.
- Step 4:** This will copy the audio drivers into the hard drive.
- Step 5:** A message will appear stating you must restart the Windows® 95 system, select **yes** to restart.

#### 2.1-2 Windows® 95 Application:

- Step 1:** Insert the provided CD\_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD\_ROM drive, double click on the CD\_ROM icon. This will show the setup screen.
- Step 3:** Click on “YAMAHA YSTATION32” icon.
- Step 4:** Follow the setup procedure.
- Step 5:** A message will appear stating you must restart the Windows® 95 system, select **yes** to restart.

## **2.2 Windows® NT 4.0**

### **2.2-1 Audio Driver Installation Procedure:**

- Step 1:** Click **Start** menu and select **Control Panel** from **Settings** group.
- Step 2:** Select **Multimedia** icon.
- Step 3:** Click on the **Devices** tab.
- Step 4:** Click **Add**.
- Step 5:** Double click on **Unlisted or Updated Driver** in the list.
- Step 6:** Insert the **CD-ROM Disk** into the CD-ROM Drive.
- Step 7:** When the Install from Disk dialog box appears, look for your CD-ROM drive: `:\YAMAHA\NT40\multil\`
- Step 8:** Click **OK**.
- Step 9:** Select the language of the driver.
- Step 10:** Click **OK**.
- Step 11:** Set parameters.
- Step 12:** A message will appear stating that the drivers were successfully installed. Click **OK**. You must now restart Windows® NT 4.0.

## **2.3 Detailed User's Manual**

The detailed user's manual can be found on the CD-ROM provided:

**PATH: YAMAHA\YMF715\NT40\Manudoc.doc**

## Chapter 7

# INTEL® 82558 FAST ETHERNET LAN DRIVER

## 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.

### 1.1 Features

- IEEE 802.3/802.3u 10BASE-T and 100BASE-TX compatible
- Glueless 32-bit PCI bus master interface
- Backward 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 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

## **2. LAN Driver Setup**

### **2.1 Windows® 95**

To install the driver, just insert the provided CD-ROM into the CD-ROM drive. The CD-ROM will autorun. Press the button for installing the LAN driver.

### **2.2 Other OS driver**

To install the driver for other operating system, just insert the provided CD-ROM into the CD-ROM drive.

Type:

CD-ROM Path:\E100B\Setup/readme

This will show different procedure for the installation of LAN driver for different kind of operating system. Just follow the procedures given.