

Chapter 1

INTRODUCTION

The NLX BX4 mainboard is a high-performance personal computer mainboard based on Intel® Pentium® II processor. It combines Intel® 740 graphics accelerator, YAMAHA® YMF740 enhanced audio, and Intel® 82558 10/100M Ethernet . The Pentium® II processor supports MMX™ (Multimedia Extension) technology.

The mainboard uses the highly integrated Intel® 82443BX chipset to support the PCI/ISA and Green standards, and to provide the Host/AGP bridge. 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 System Hardware Monitor Controller. This 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 233MHz, 266MHz, 300MHz, 333MHz, 350MHz, 400MHz, and faster.
- 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 8.2 specifications.
- Over-Voltage and Over-Current protection.

Chipset

- Intel® 82440BX AGP chipset.

Clock Generator

- 66.6MHz and 100MHz clocks are supported.

Main Memory

- Supports six memory banks using three 168-pin unbuffered DIMM sockets.
- Supports a maximum memory size of 768MB.
- Supports ECC(1-bit Error Code Correct) function.
- Supports only 3.3v SDRAM DIMM.

VGA

- Intel® 740 Graphics Accelerator
 - Running on AGP BUS
 - Onboard 8MB SDRAM
 - 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.

Power Management Features

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

Sound

- YAMAHA® YMF740 Audio Controller.
- Sound Blaster PRO Compatible.
- Support Plug and Play:
 - stereo 16-bit A/D
 - stereo 16-bit D/A
- Stereo enhancement support.
- Advanced power management.
- Maximum 32 voice xG capital wavetable.
- Synthesizer including GM compatible.

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.

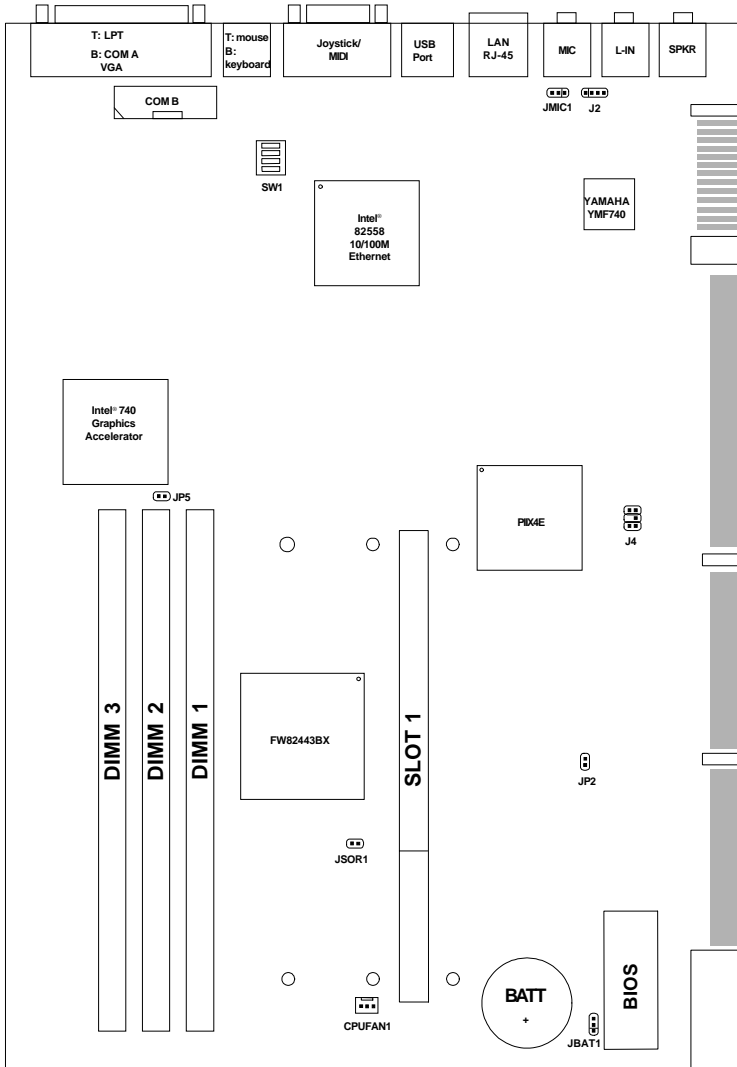
Dimension

- 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.
- Restore AC power loss status.

1.2 Mainboard Layout



MS-6121

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.

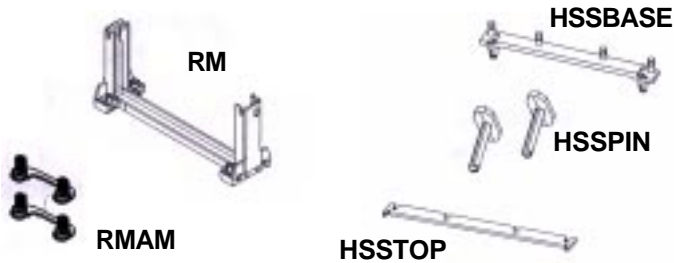
***Heat Sink Support Pin (HSSPIN)** - Plastic pins inserted through the HSSBASE to secure it to the mainboard (2 required per Assembly).

***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.

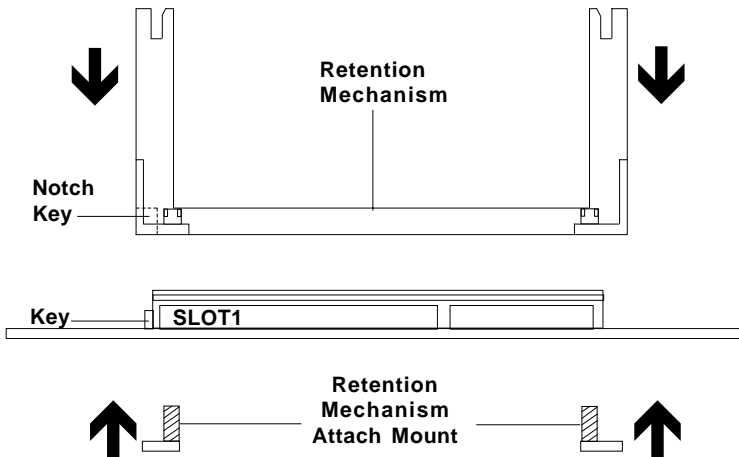
** Provided by Special request.



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

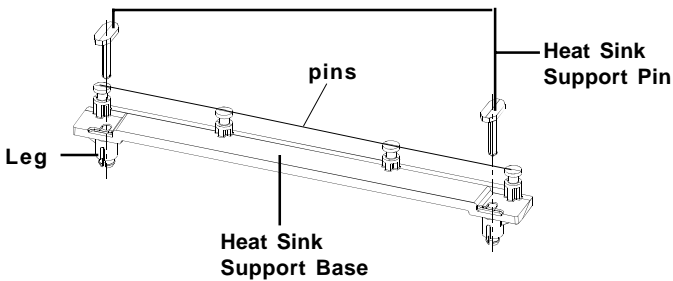
Step 2: Install the Retention Mechanism.

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.



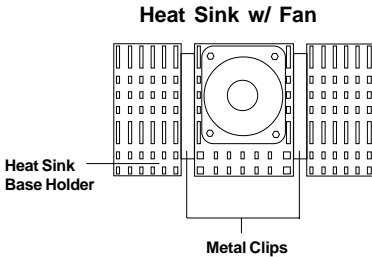
Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

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.

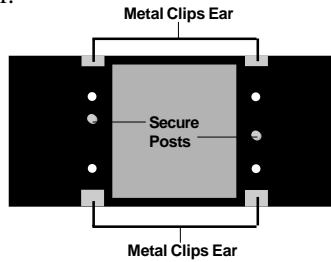
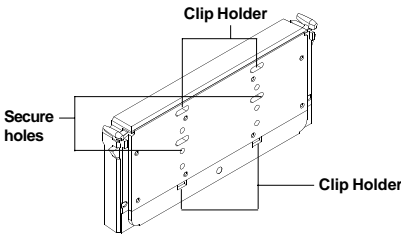
Push down the metal clips, so that they are in line with the back of the Heat Sink. Be careful, so as not to detach the metal clips from the Heat Sink.



↓ 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.

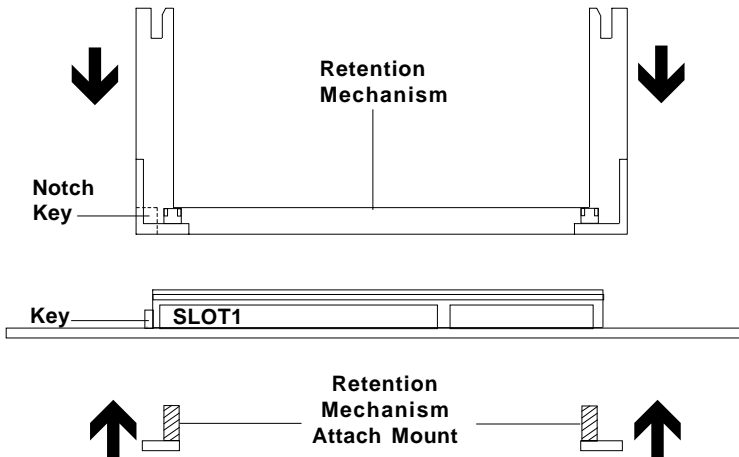
B. Boxed Pentium® II processor Installation Procedures

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.

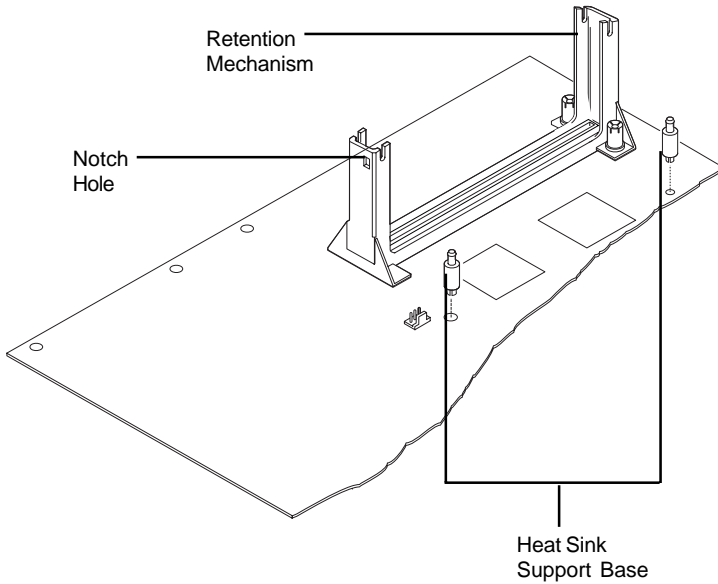
Step 2: Install the Retention Mechanism.

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.

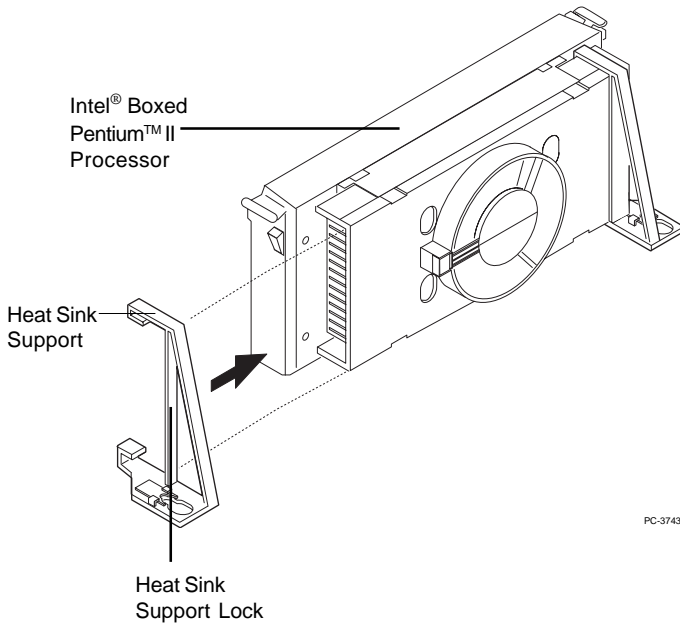
Look for the 2 holes across Slot 1, and match it with the 2 Heat Sink Support Base. Take note that one hole/base is bigger than the other.



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

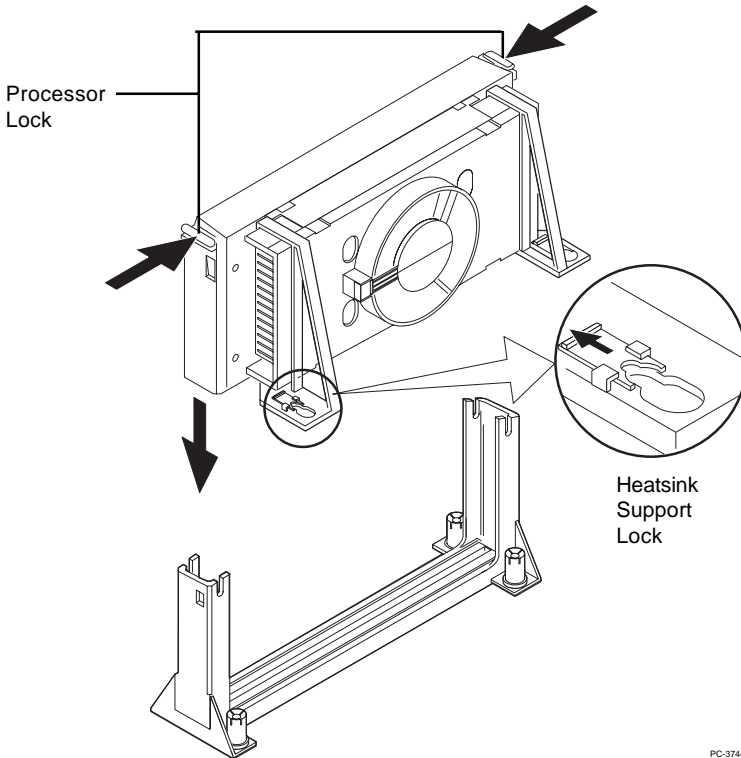
Step 4: Install the Heat Sink Support.

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.

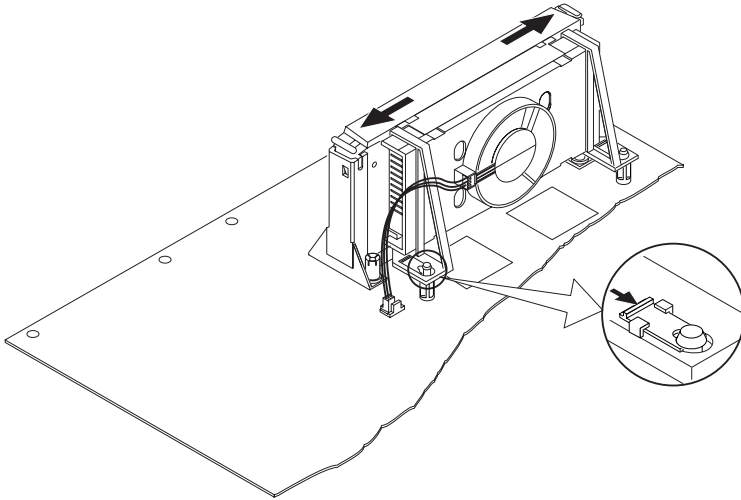


Step 5: Unlock the Processor Locks and Heat Sink Support Locks.

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.

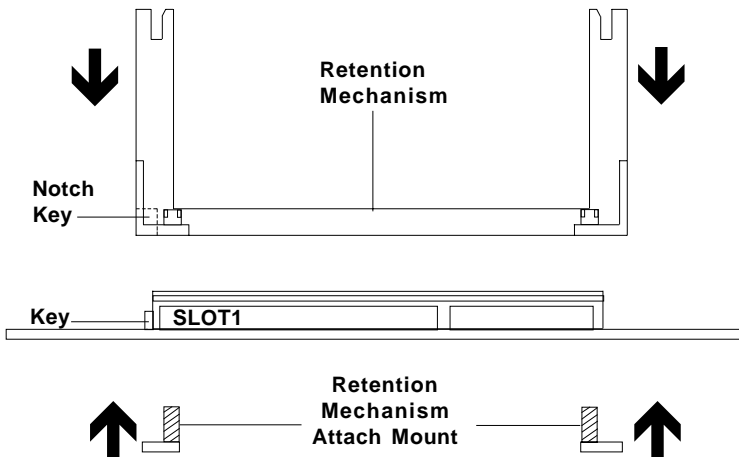
The installation is now complete.

C. OEM Celeron™ Processor Installation Procedures

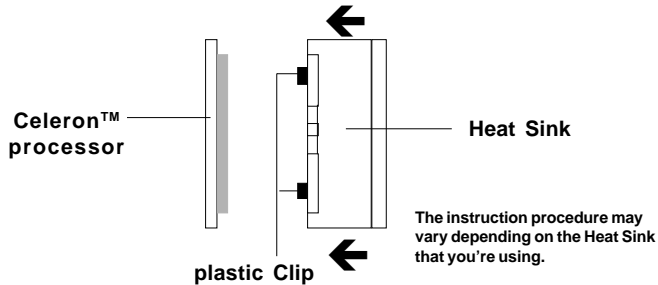
Step 1: Insert the Retention Mechanism Attach Mount at the bottom of the mainboard.

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.

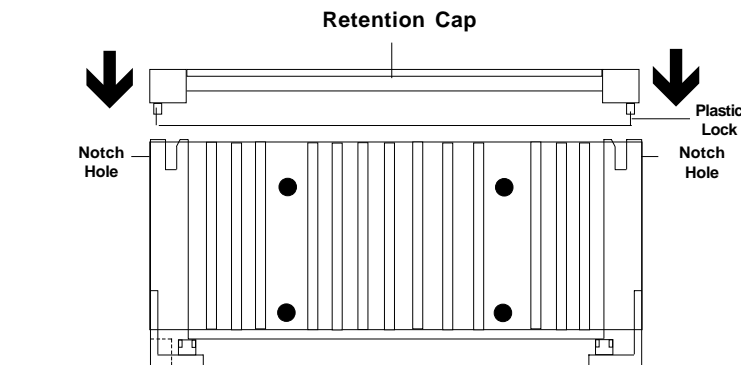


Push down the plastic clips, so that they are in line with the hole on the processor. Check for perfect fit.

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.

2.1-2 CPU Core Speed Derivation Procedure

1. 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:

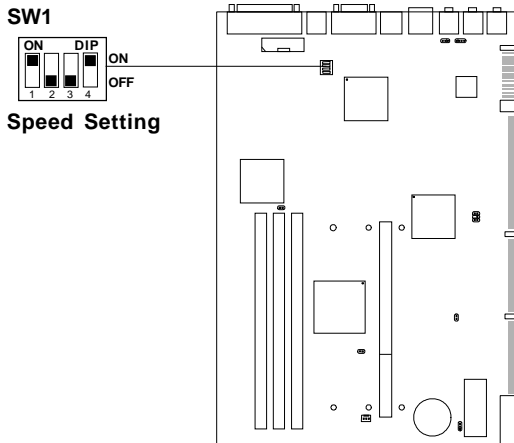
$$\begin{array}{lcl}
 \text{If} & \text{CPU Clock} & = 66\text{MHz} \\
 & \text{Core/Bus ratio} & = 4 \\
 \text{then} & \text{CPU core speed} & = \text{Host Clock} \times \text{Core/Bus ratio} \\
 & & = 66\text{MHz} \times 4 \\
 & & = 266\text{MHz}
 \end{array}$$

SW1				CPU
1	2	3	4	Core/Bus Ratio
OFF	OFF	ON	OFF	1.5
OFF	OFF	OFF	OFF	2
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. The PCI Bus Clock is fixed at 33MHz.

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.*). The mainboard can auto-detect between 66 or 100MHz CPU Bus Frequency.



a. 66MHz CPU Bus Frequency

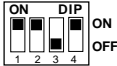

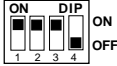


CPU Type	SW1
200MHz	
233MHz	
266MHz	
300MHz	
333MHz	

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

b. 100MHz CPU Bus Frequency

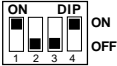


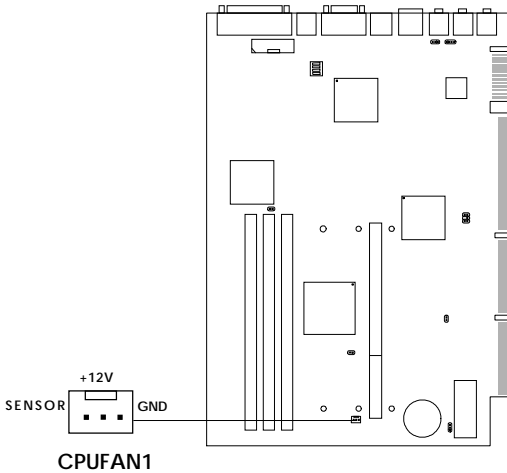
CPU Type	SW1
350MHz	
400MHz	
450MHz	

Table 2.2 350 ~ 450MHz Intel® Pentium® II processor

2.1-4 Fan Power Connector: CPUFAN1

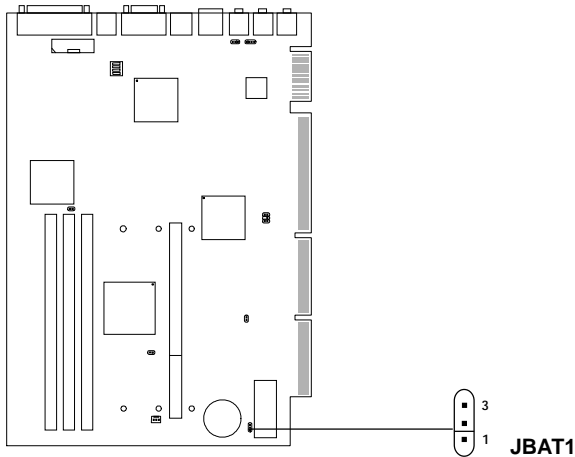
This connector support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard had 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 PIIX4E 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.

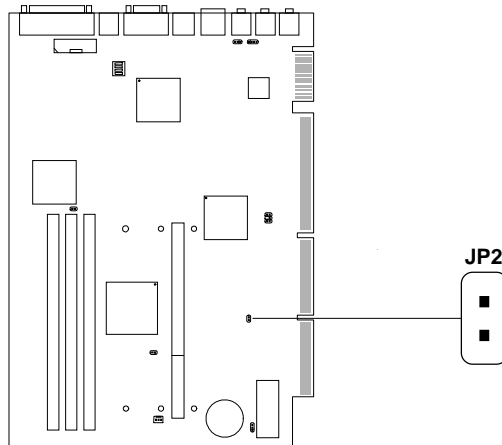




Table 2.3: Power On Mode Feature

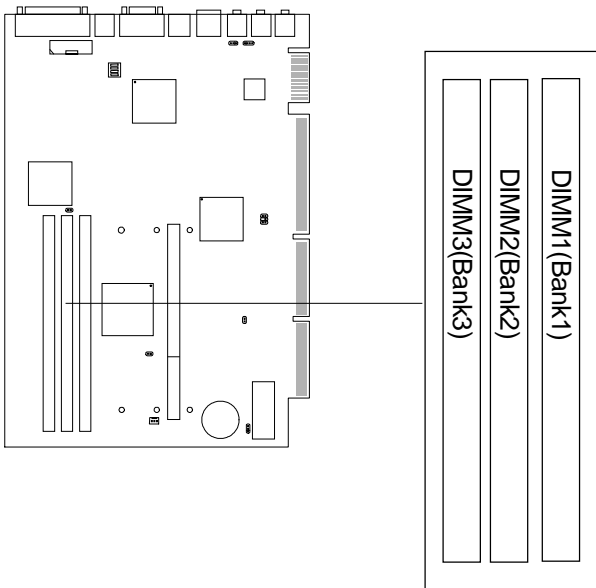
JP2	Feature
	Select Boot-Up by Switch
	Select Immediate Boot-Up

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

2.4 Memory Installation

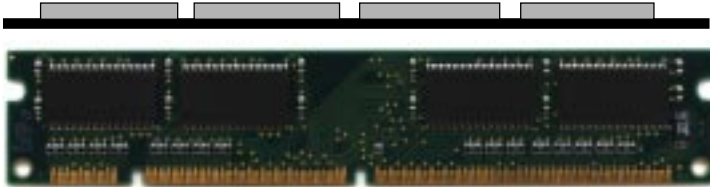
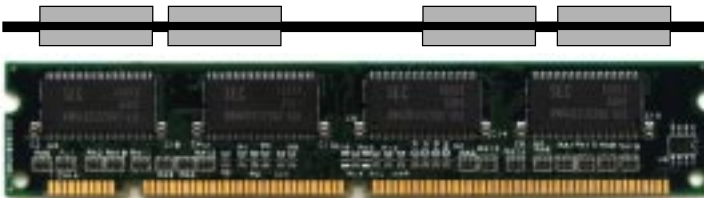
2.4-1 Memory Bank Configuration

The mainboard supports a maximum of 768MB of memory : It provides three 168-pin DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 256 Mbytes DIMM memory module. The memory module can only support SDRAM(Synchronous DRAM) MODE DRAM.

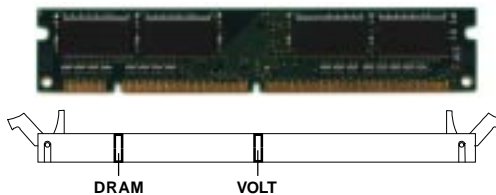


WARNING!

There are two kinds of DIMM specification supported by this mainboard: PC100 and PC66. If you use 66MHz CPU Bus Frequency, these two DIMM Specs. is supported. If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported.

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. Supports SDRAM DIMM.
2. To operate properly, at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM2, or DIMM 3 in any order.
4. Supports 3.3 volt DIMM.
5. The DRAM addressing and the size supported by the mainboard is shown below:

Table 2.4-1 SDRAM Memory Addressing

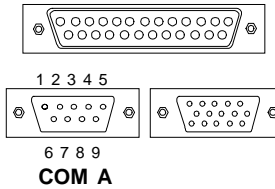
DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single Side(S)	Double Side(D)
16M	1Mx16	ASYM	12	8	8MB	16MB
	2Mx8	ASYM	12	9	16MB	32MB
	4Mx4	ASYM	12	10	32MB	64MB
64M	2Mx32	ASYM	12	9	32MB	64MB
	2Mx32	ASYM	13	8	16MB	32MB
	4Mx16	ASYM	12	10	32MB	64MB
	4Mx16	ASYM	14	8	32MB	64MB
	8Mx8	ASYM	14	9	64MB	128MB
	16Mx4	ASYM	14	10	128MB	256MB

Note: * Both 4M x 4 and 16M x 4 SDRAM device are supported in the form of registered DIMM only.

* If you used the mainboard onboard VGA, you need to install at least 32MB of SDRAM.

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.

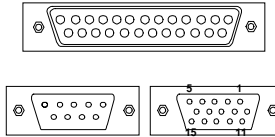


PIN DEFINITION

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

2.6 VGA DB 15 Pin Connector

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

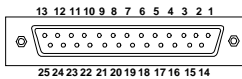


VGA

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

2.7 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:



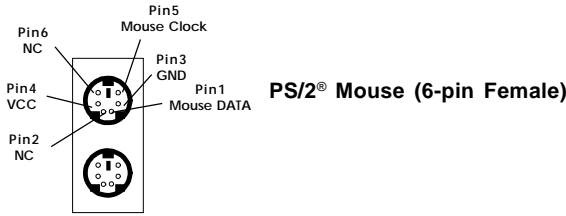
LPT

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		

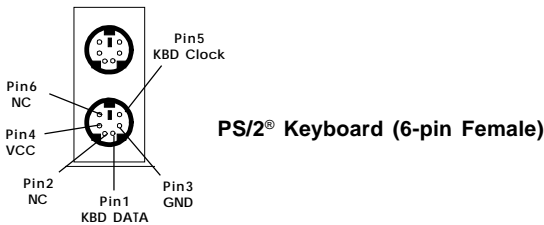
2.8 Mouse Connector

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:



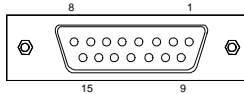
2.9 Keyboard Connector

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.



2.10 Joystick/Midi Connector

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

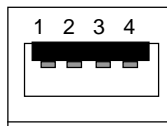


Joystick/MIDI Connector

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

2.11 USB Connector

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.

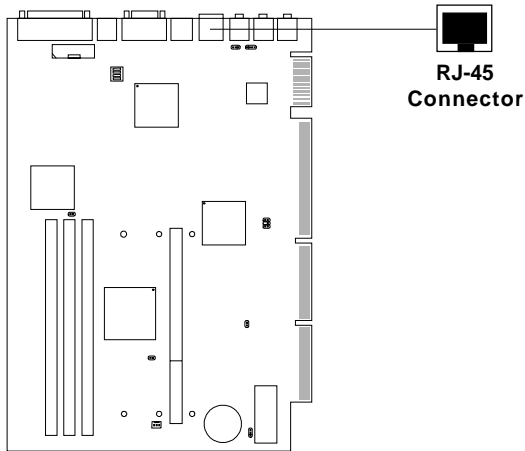


USB Port

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

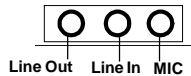
2.12 LAN Connector

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



2.13 Audio Port Connectors

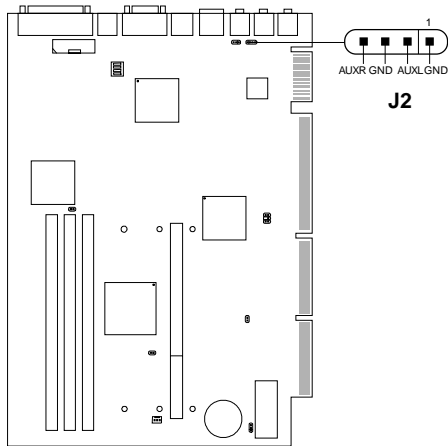
Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for the microphones.



1/8" Stereo Audio Connectors

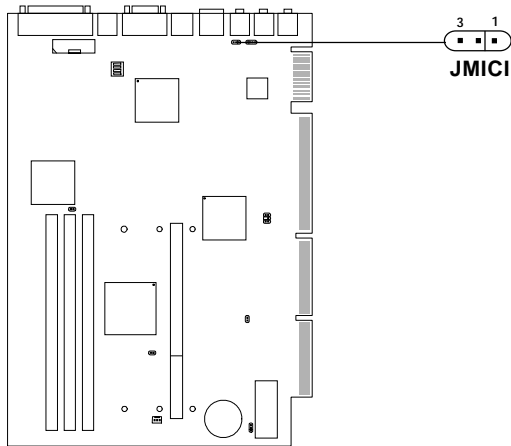
2.14 AUX Line In Connector: J2



This connector is used for DVD Add on Card with Line In connector.



2.15 MIC Selector Jumper: JMICI

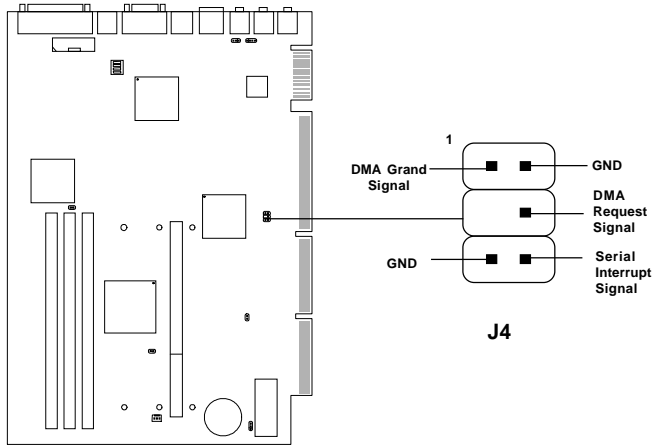
This jumper is used to select which type of microphone to use.



JMICI	Function
	<p>Three Terminal MIC</p>
	<p>Two Terminal MIC</p>

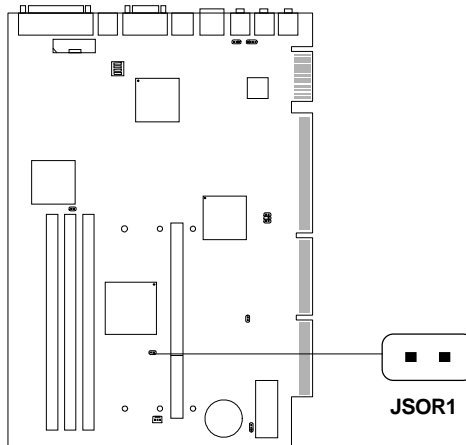
2.16 SB_Link™ Card Sound Connector: J4

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



2.17 CPU Temperature Sensor: JSOR1 (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.



2.18 Onboard VGA Disable/Enable Jumper: JP5

If your mainboard supports onboard VGA, this jumper is used to disable the onboard VGA.

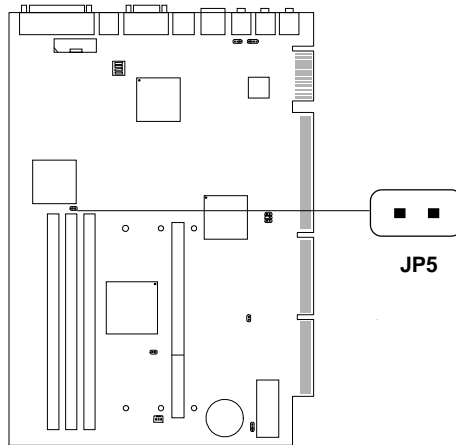


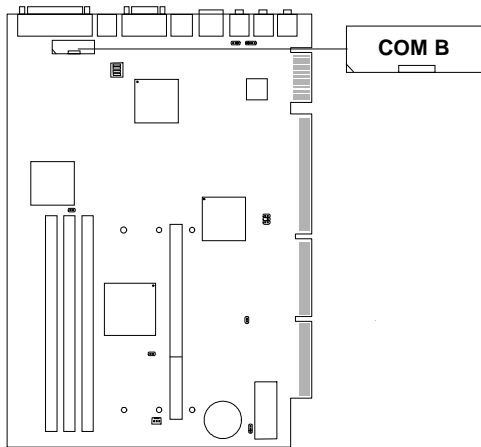


Table 2.18: Onboard VGA Jumper Feature

JP5	Feature
	Enable Onboard VGA
	Disable Onboard VGA

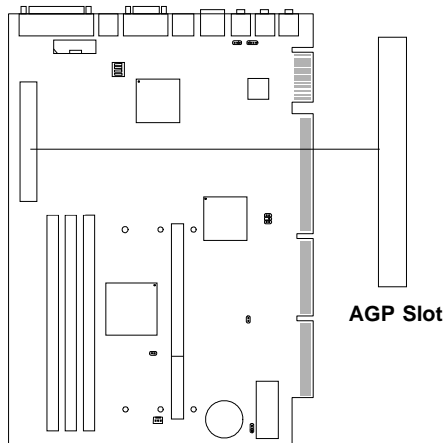
2.19 Serial Port Connector: COM B

The mainboard provides another serial port connector (COM B). This port is a 16550A high speed communication ports that send/receive 16 bytes FIFOs.



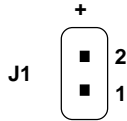
2.20 AGP(Accelerated Graphics Port) Slot: AGP1 (reserved)

This is an optional function. If there's an onboard VGA chipset on the mainboard, the AGP slot will not exist. But if there's no onboard VGA on the mainboard, the AGP slot will exist.

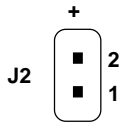


2.19-1 Power Saving LED: J1

This connector is used by Power Saving LED.

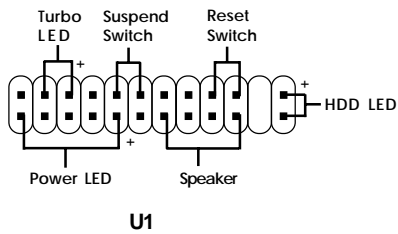


Note: During **Suspend Mode**, this LED will light up.



Note: During **System-On Mode**, this LED will light up.

2.19-3 Front Panel Connector: U1



a. Turbo LED

The Turbo LED is always ON. You can connect the Turbo LED from the system case to this pin.

b. Reset Switch

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

c. 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.

d. Speaker

Speaker from the system case is connected to this pin.

e. 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.

f. Suspend Switch

This 2-pin connector is used to suspend the system.

2.19-4 USB Secondary Port: USB2

Connector for USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.

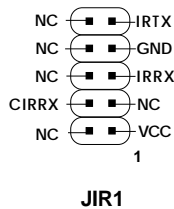
2.19-5 Power ON/Off Switch Connector: JSW1

Connect to a 2-pin push button switch. If Instant-on is Enabled, every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON. **If Instant-on is Disabled: During ON stage, push once and the system goes to sleep mode: pushing it more than 4 seconds will change its status from ON to OFF.** If you want to change the setup, you could go to the BIOS Power Management Setup.

**JSW1**

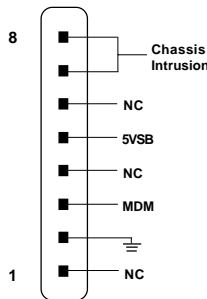
2.19-6 Infrared Module Connector: JIR1

The mainboard provides two 5-pin infrared (IR) connectors for IR modules. These connectors are for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function. Consumer IR is a reserved function for future Super I/O chipset. **CIRRX is reserved.**



2.19-7 Internal Modem Ring Wake-Up Connector/Chassis Intrusion Selector: J3

The J3 pin 1-6 is used for special internal modem that supports the ring power on function.



J3	Chassis Intrusion
Short pin 7-8	To Enable Chassis Intrusion
Open pin 7-8	To Disable Chassis Intrusion

2.19-8 Chassis Intrusion Switch Connector: J4

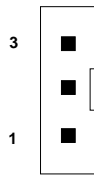
This connector can be used to connect the Chassis Intrusion switch.



J4

2.19-9 Wake On LAN Connector: JWOL

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



JWOL

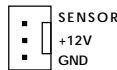
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

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)

2.19-10 Power/System Fan Connector: PSFAN1/SFAN1

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.



PSFAN1: Power Fan
SFAN1: System Fan

PSFAN1/SFAN1

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.

2.19-11 2mm CD-ROM Input Connector: J6

J6 is used as a CD Line-in connector. Connect the audio cable provided by the CD-ROM.

2.19-12 2.54mm CD-ROM Input Connector: J7

J7 is used as a CD Line-in connector. Connect the audio cable provided by the CD-ROM.

Chapter 3

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.

3.1 Entering Setup

Power on the computer and press 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 key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

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

3.2 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.

Supervisor Password/User Password

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

Load Setup Defaults

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

Special Features Setup

This function is reserved for Special Hardware Monitor..

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 (2A59IM4A)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.**

Date(mm:dd:yy): Wed, June 10,1998							
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.			Base Memory:		640K	
Drive B :	None			Extended Base Memory:		15360K	
Video :	EGA/VGA			Other Memory:		384K	
Halt On :	All,but Keyboard			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>.

Day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	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, user definable types, and auto-detect type for Enhanced IDE BIOS. Type 1 to Type 45 are pre-defined. Type User is user-definable and Auto is BIOS auto-detectable.

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”.

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODEHDD	access mode

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

Enable 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.

Enabled (default) Enable cache

Disabled Disable cache

Note: The internal cache is built in the processor.

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. Using 100MHz CPU BUS Deschutes processor, always set to Enabled. For 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, if there's a LAN onboard, the priority booting will be from the LAN.

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, LS/ZIP. 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 760K, 1.2M and 1.44M are all 80 tracks.

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.

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.

- | | |
|-----------------------|---|
| System | The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. |
| Setup(default) | 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.

- | | |
|---------------------------|-----------------------|
| Disabled (default) | Disables the function |
| Enabled | 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.

Enabled (default)	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

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

Enabled	Optional shadow is enabled
Disabled (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.

3.6 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(2A59IM4A)
CMOS SETUP UTILITY
CHIPSET FEATURES SETUP

SRAM RAS-to-CAS Delay	:3	
SDRAM RAS Precharge Time	:3	
SDRAM CAS Latency Time	:3	
DRAM Data Integrity Mode	:Non-ECC	
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	
AGP Aperture Size (MB)	:64	
		Esc : Quit ↑↓→← : Select item
		F1 : Help PU/PD/+/- : modify
		F5 : Old Value(Shift) F2 : Color
		F7 : Load Setup Defaults

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

SDRAM RAS-To-CAS Delay

You can select the RAS-to-CAS delay time for SDRAM in HCLKs of 2 or 3(default). Setting the value in the field should depend on the SDRAM installed.

SDRAM RAS Precharge Time

You can select the RAS Precharge time for SDRAM in HCLKs of 2 or 3(default). Setting the value in the field should depend on the SDRAM installed.

SDRAM CAS Latency Time

You can select CAS latency time in HCLKs of 2 or 3. The system board designer should set the values in this field, depending on the DRAM installed.

DRAM Data Integrity Mode

Select Non-ECC or ECC(error-correcting code), according to the type of installed DRAM. The settings are Non-ECC or ECC.

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.

Enabled	BIOS access cached
Disabled	BIOS access not cached

Video BIOS Cacheable

Select Enabled allows caching of the system BIOS ROM at C000h-C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Enabled	Video BIOS access cached
Disabled	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 item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

Memory Hole At 15M-16M

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

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.

3.7 Power Management Setup

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

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

ACPI Function	:Enabled	Restore AC/Power Loss	:Power On
Power Management	:User Define	IRQ 8 Clock Event	:Disabled
PM Control by APM	:Yes	** Reload Global Timer Events **	
Video Off Method	:DPMS	IRQ [3-7,9-15],NMI	: Disabled
Video Off After	:Standby	Primary IDE 0	: Enabled
Modem Use IRQ	:3	Primary IDE 1	: Enabled
		Secondary IDE 0:	Disabled
Doze Mode	:Disable	Secondary IDE 1:	Disabled
Standby Mode	:Disable	Floppy Disk	: Disabled
Suspend Mode	:Disable	Serial Port	: Enabled
HDD Power Down	:Disable	Parallel Port	: Disabled
Throttle Duty Cycle	:62.5%		
VGA Active Monitor	:Disable		
Soft-Off by PWR-BTTN	:Instant-Off		
CPUFAN off in Suspend	:Enabled		
Resume by Ring	:Disabled		
Resume by Alarm	:Disabled		
Date(of Month) Alarm	:2	Esc : Quit	↑↓→← : Select item
Time(hh:mm:ss) Alarm	:0:0:0	F1 : Help	PU/PD/+/- : modify
		F5 : Old Value(Shift)	F2 : Color
		F7 : Load Setup Defaults	
Wake Up On LAN	: Disable		

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

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

PM Control by APM

No	System BIOS will ignore APM when power managing the system.
\Yes	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

Blank Screen	The system BIOS will only blank off the screen when disabling video.
V/H SYNC C+Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals from VGA card to monitor.
DPMS	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/ 10 Min/12 Min/ 20 Min/30 Min/ 40 Min/1 Hr	Defines the continuous idle time before the system enters DOZE mode. 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 system enters STANDBY mode.

4 Min/8 Min/**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, 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 system enters SUSPEND mode.

4 Min/8 Min/**12 Min/20 Min/****30 Min/40 Min/****1 Hr**

If any item defined in the options of “Power Down & Resume Events” is enabled & active, 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 the HDD enters the power saving mode (motor off). BIOS will turn off the HDD’s motor when time is out.

3 Min/4 Min/**5 Min/6 Min/****7 Min/8 Min/****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 once, the system goes into suspend mode and if you push it more than 4 seconds, 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 not be turned off.

Resume by Ring

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

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.

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:

Date(of month) Alarm	You can choose which month the system will boot up. Set to 0, to boot every month.
Time(hh:mm:ss) Alarm	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.

Wake Up On LAN

To use this function, you need a LAN which support power on functions. It should also support the wake-up on LAN jumper (JWOL1).

Enabled	Wake up on LAN supported.
Disabled	Wake up on LAN not supported.

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.

Note: a. If you set this option to last status, jumper JP2 must be open or this function will not work.

IRQ 8 Clock Event

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

IRQ 8 Clock Event

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

During Enabled, if any interrupt event occurs, the system will wake-up from suspend mode. During Disabled, the system will not monitor any interrupt event.

3.8 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 (2A69HM4D)
PNP/PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP OS Installed	:No	Assign IRQ for VGA	: Enabled
Resources Controlled By	:Manual	Assign IRQ for USB	: Enabled
Reset Configuration Data	:Disabled	Used MEM base addr	: N/A
		Used MEM Length	: 8K
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	Esc : Quit	↑↓→← : Select item
DMA-5 assigned to	:PCI/ISA PnP	F1 : Help	PU/PD/+/- : modify
DMA-6 assigned to	:PCI/ISA PnP	F5 : Old Value(Shift)	F2 : Color
DMA-7 assigned 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 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 resources 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 : Legacy ISA
IRQ-9 assigned to : PCI/ISA PnP
IRQ-10 assigned to : PCI/ISA PnP
IRQ-11 assigned to : PCI/ISA PnP
IRQ-12 assigned to : PCI/ISA PnP
IRQ-14 assigned to : 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.

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 base addr

Lets the user choose the Legacy ISA addr. memory length. The settings are 8K, 16K, 32K, or 64K.

3.9 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.

3.10 Special Features Setup (optional)

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

ROM PCI/ISA BIOS (2A69HM4C)
 INTEGRATED PERIPHERALS
 AWARD SOFTWARE, INC.

***** POST SHOWING *****		***** SYSTEM MONITOR *****	
Chassis Fan Detected	:Disabled	Chassis FAN RPM	:0
Power Fan Detected	:Disabled	Power FAN RPM	:0
CPU Fan Detected	:Enabled	CPU Fan RPM	:6367
Chassis Intrusion Detect	:Disabled	System Temperature	:26°C/78°F
Voltage Detected	:Enabled	CPU Temperature	:28°C/82°F
Vcore Voltage Detected	:Enabled	CPU Critical Temp	:Disabled
+2.5V Voltage Detected	:Enabled	Shutdown Temp	:Disabled
+3.3V Voltage Detected	:Enabled		
+5.0V Voltage Detected	:Enabled		
+12V Voltage Detected	:Enabled		
-12V Voltage Detected	:Enabled		
-5.0V Voltage Detected	:Enabled		
		Esc : Quit ↑↓→← : Select item	
		F1 : Help PU/PD/+/- : modify	
		F5 : Old Value(Shift) F2 : Color	
		F7 : Load Setup Defaults	

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. During Disabled, this will not show.

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.

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 reach 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 reach the temperature you set, this will shutdown the system.

3.11 Integrated Peripherals

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

IDE HDD Block Mode	: Enabled	RxD, TxD Active	: Hi, Lo
IDE Primary Master PIO	: Auto	IR Transimission Delay	: Enable
IDE Primary Slave PIO	: Auto	Onboard Parallell Mode	: 378/IRQ7
IDE Secondary Master PIO	: Auto	Parallell Port Mode	: SPP
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Init Display First	: PCI Slot		
Onboard Sound	: Enable		
Onboard LAN	: Enable		
Onboard FDC controller	: Enabled	Esc : Quit	↑↓→←: Select item
Onboard Serial Port 1	: 3F8/IRQ4	F1 : Help	PU/PD/+/- : modify
Onboard Serial Port 2	: 2F8/IRQ3	F5 : Old Value(Shift)	F2 : Color
UART Mode Select	: Normal	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.

Init Display First**PCI Slot/AGP Slot**

Select whether the PCI slot VGA or AGP slot VGA will function first.

Onboard Sound Controller**Enabled/Disabled**

The system has an on-board YAMAHA® YMF740 audio controller . Choose “Enabled” to use the on-board audio controller . Otherwise choose “Disabled” to use the add-on sound card controller.

Onboard LAN**Enabled/Disabled**

The system has an on-board Intel® 82558 10/100M Ethernet LAN Controller. Choose “Enabled” to use the on-board LAN controller for accessing the RJ-45. Otherwise choose “Disabled” to use the add-on LAN Card .

Onboard FDC**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.

UART Mode Select

This item allow you to determine which Infra Red (IR) function of onboard I/O chip.

Onboard Parallel Port

Disabled
(3BCH/IRQ7)/
(278H/IRQ5)/
(378H/IRQ5)

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/IRQ5	Line Printer port 1

Onboard Parallel Mode

SPP : Standard Parallel Port

EPP : Enhanced Parallel Port

ECP : Extended Capability Port

**SPP/(EPP/SPP)/
ECP(ECP/EPP)**

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.

3.12 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.
-

3.13 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 4

INTEL® 740 AGP GRAPHICS ACCELERATOR

1. Overview

The Intel740™ AGP graphics accelerator is a highly integrated graphics solution which provide high-performance 3D, 2D and video, and full support for multimedia applications, (VBI), TV Out and video capture.

The Intel740™ graphics accelerator uses a breakthrough 3D architecture that enables maximum memory bandwidth for sustained 3D performance and exceptional image quality in PCs equipped with the Pentium® II processor and an Intel® AGPset. The result is real-time 3D performance for a wide variety of new business and consumer applications running mainstream platforms. The Intel740™ graphics accelerator is well suited for home user "edutainment" systems, small business graphics-enabled authoring platforms and corporate data-intensive tools. This platform provides a leap in graphics performance, enabling creativity and consumer/business applications.

In addition to its breakthrough 3D capabilities, the Intel740™ graphics accelerator provides a complete-graphics solution consisting of outstanding 2D, smooth video playback, as well as support for Video Out and full video capabilities support for PC theater applications. The Intel740™ graphics accelerator's hardware-assist feature enhances the software DVD playback capabilities and its VMI port provides a glueless interface to support hardware DVD. The Intel740™ graphics accelerator provides the flexibility to design systems to deliver high-performance graphics at 8MB of local memory.

1.1 Feature

Breakthrough 3D

- 844K + poly/sec
- 45-55 Mpixels/s, 425-500K poly/s (sustained)
- 14K polygons/frame (sustained)
- Bilinear mip-mapping
- Gouraud, Specular shading
- 16-bit z-buffer
- Alpha blend, edge smoothing

Highest perf. AGP

- Full Featured AGP support
- Up to 533MB/sec
- Direct Memory Execution

64-bit 2D Accelerator

- Supports up to 1600x1200 @60Hz

Video Acceleration

- 205MHz+ DAC
- Full Screen Playback
- Vert. & horiz. scaling
- 30 fps, full screen
- 24 fps software DVD

Power Management

- Supports VESA Display Power Management Signaling (DPMS) compliant VGA monitor for power management

Multimedia Application

- Supports DDC1 and DDC2B specification

1.2 System Requirements

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

Computer	Intel® Pentium® II processor or higher
Monitor	VGA Support, minimum 640x480 resolution
Operating system	DOS 5.0 or higher, Windows® 95, Windows® NT 3.51 or 4.0, or OS/2®
CD-ROM	Double Speed or Higher
Chipset	Intel® 740 AGP Graphics Accelerator
VGA BIOS	Version 1.01 or Higher

2. Intel740™ 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

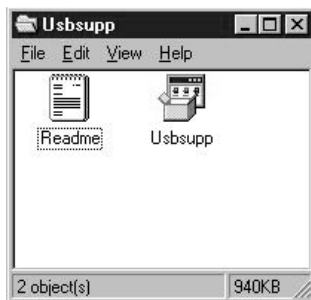
After installing Windows® 95 on the mainboard, Windows® 95 will auto-detect the changes in your hardware configuration, and will install the Standard VGA Driver. To get a higher resolution and performance, you need to install the MS-6121 VGA Driver.

Before installing the VGA driver, you need to install the Windows® 95 OSR2 USB supplement. Otherwise, there will be a ? in the device manager.

To install Windows® 95 OSR2 USB supplement, follow the steps below:

Step 1: Insert the Windows® 95 OSR2 CD into your CD-ROM drive.

Step 2: In CD-ROM drive, look for the **usb supp** directory.



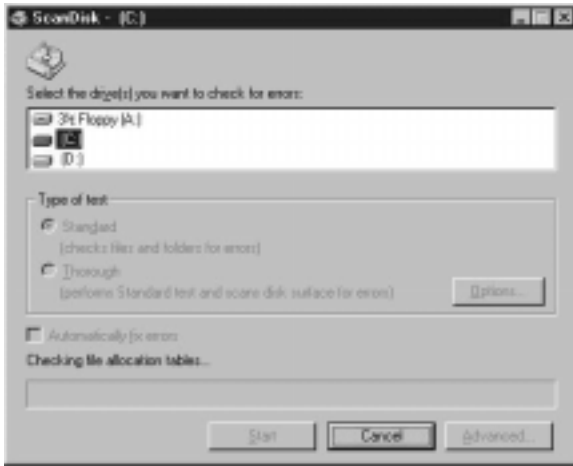
Step 3: Double click on **usb supp** program.



Step 4: Click on **Yes** button.



Step 5: Click on **Yes** button.



This will first scan the C: drive, then copy the necessary files needed.

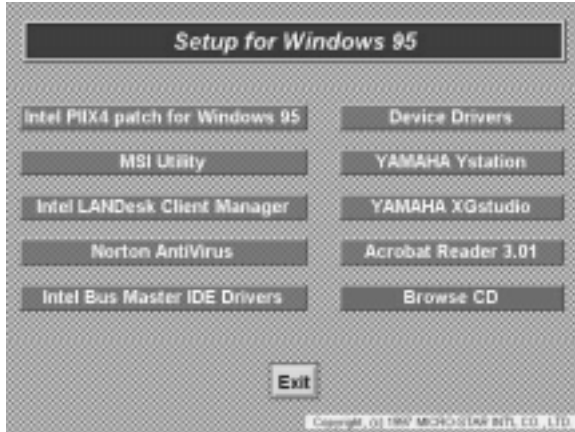
Step 4: Click on **OK** button.



Step 5: Click on the **OK** button. This will restart your system.

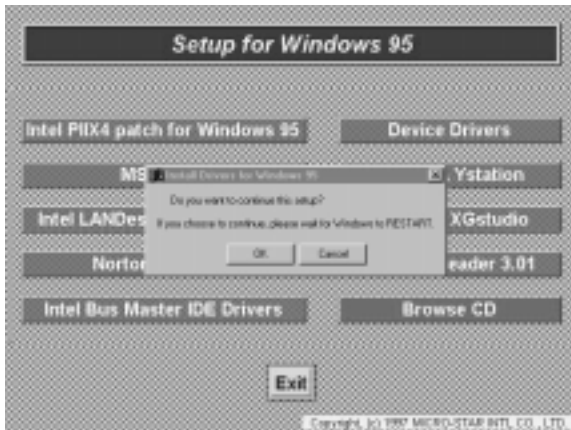
To install MS-6121 enhanced VGA driver, follow the steps below:

Step 1: Insert the CD provided into your CD-ROM drive.

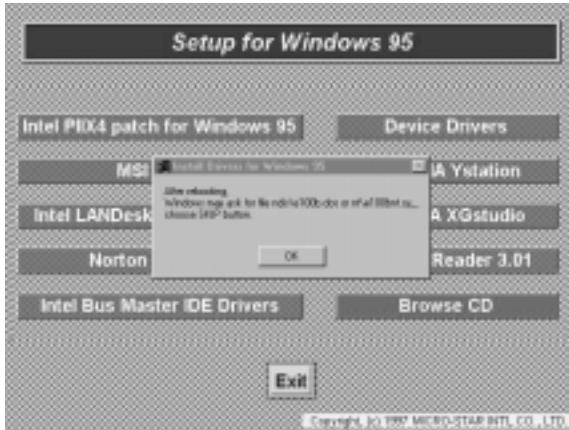


After inserting the CD, this will autorun showing this window.

Step 2: Click on **Device Drivers** button.



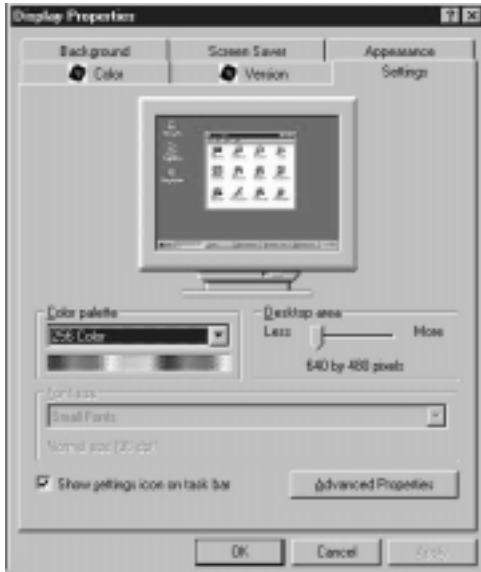
Step 3: Click on the **OK** button. This will install the VGA driver automatically and restart the Windows® 95.



Step 4: Click on the OK Button. This will install the driver automatically and restart the Windows® 95.

Note: a. After Restarting, the Windows 95 will ask you to “Please Insert the disk labeled **Adapter Configurations and Drivers** Diskette”. Just Click OK.

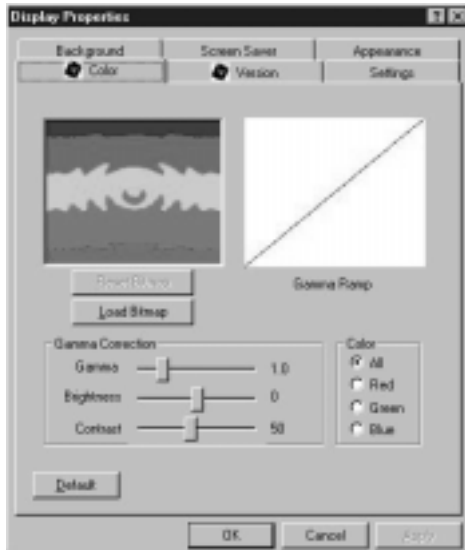
b. Windows® 95 will also look for these files: ndis\eyoubidos and nt\e100bur.sys. Just Skip file, and restart the Windows® 95.



This will be the new **Display Properties**.

Using Display Properties new function:

This function is used to show the Display Driver version and memory size.



This function is used to adjust the Gamma Ramp, Gamma, Brightness, Contrast, and color.

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: Insert the CD_ROM provided into the CD_ROM drive.

Step 2: In Windows NT, click on the **Start** menu and select **Control Panel** from the **Settings** group.

Step 3: Double click on the **Display** icon.

Step 4: Select **Setting** on the Display properties.

Step 5: Select **Display Type**.

Step 6: Select **Change** from the Adapter Type area.

Step 7: Select **Have Disk** from change display.

Step 8: Click on the **Browse** button of install disk.

Step 9: Look for your CD_ROM driver:\Intel\i740\nt4.0

Step 10: Choose **oemsetup** and click open

Step 11: When the Change Display dialog box appears, click **OK**.

Step 12: When the Third Party drivers dialog box appear, click on **Yes**.

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

Chapter 5

AUDIO DRIVER

1. Overview

The YAMAHA® YMF740 PCI audio integrates OPL3, MPU401 MIDI interface and joystick port. This function is suitable for multi-media applications.

1.1 Features

- Support Sound Blaster game compatibility.
- Support Windows sound system compatibility.
- Full Duplex Operation.
- Support Software Wave Table

1.2 System Requirements

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

Computer	Intel® Pentium® II processor or higher
Operating system	DOS 5.0 or higher, Windows® 95, Windows® NT 3.51 or 4.0, or OS/2®
CD-ROM	Double Speed or Higher
Chipset	YAMAHA YMF740

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 Intel® PIIX4 patch for Windows® 95, Norton® Anti-virus, and LDCM (optional). Just click the button for automatic installation for audio driver.

2.1 Windows® 95

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 “Device 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 YSTATION” icon.
- Step 4:** Follow the setup procedures.
- Step 5:** A message will appear stating you must restart the Windows® 95 system, select **yes** to restart.

2.1-3 YAMAHA XG Wavetable Installation

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 XG Studio” icon.

Step 4: Follow the setup procedures.

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\YMF740\NT40**
- 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 following path of the CD-ROM provided:

PATH: YAMAHA\YMF740\Guide

Chapter 6

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.