Chapter 1

INTRODUCTION

The PCI Pentium®II NA7 PCI/ISA mainboard is a high-performance personal computer mainboard based on the Pentium®II processor. The Pentium®II CPU supports MMX™(Multimedia Extension) technology.

The mainboard utilizes the Intel®82440FX PCI Chipset which has high integration and provides all system control functions. In addition there is an on-chipset USB and IDE controller which supports IDE PIO/Bus master operation mode for IDE HDD/CD-ROM. The PIO mode supports Mode 0,1,2,3 and 4, with a transfer rate up to 22 MB per/sec. It also supports the Modem Ring wake-up functions, voltage and thermal detect.

1.1 Mainboard Features

CPU

- Two Slot 1 for Dual Pentium® II Processor .
- Supports 233MHz, 266MHz and higher.
- Core/Bus ratios are x3.5, x4, x4.5, and higher.

Cache Memory

- Internal Level 1 Cache: 16KB instruction code and 16KB data cache.
- Internal Level 2 Cache: 256KB/512KB (depending on CPU)

VRM

- Two VRM(Voltage Regulator Module) is on board. It provides power for the processor.

Chip Set

- Intel®82440FX PCI Chipset.

Clock Generator

- 60MHZ/66.6MHz clocks are supported. Both meet Pentium® II processor and NATOMA(82440FX) Chipset specifications.

Main Memory

- Supports eight memory banks using four 168-pin unbuffered DIMM sockets.
- Up to 1 GB main memory.
- Supports symmetric or asymmetric memory with ECC(Error Check Correct) function.
- Supports Fast Page (FP) Mode and Extended Data Output (EDO) Mode.

Note: BEDO and **SDRAM** are not supported.

Slots

- Five 32-bit Master PCI Bus slots and Three 16-bit ISA bus slots. One shared slot that can be used as ISA or PCI.

On-Board Peripherals

- On-Board Peripherals include:
  - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
  - 2 serial ports (COMA + COMB)
  - 1 parallel port supports SPP/EPP/ECP mode
  - 1 IrDA connector or Fast IrDA(reserved).

On-Board IDE

- An IDE controller on the Intel®821371SB PCI Chipset provides IDE HDD/ CD-ROM with PIO and Bus Master Operation Mode. The PIO Mode supports modes 0, 1, 2, 3 and 4 with a transfer rate of 22 Mbytes per second.

On-Board USB

- Supports dual port USB(Universal Serial Bus).

BIOS

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

RTC

- Non-Volatile RTC with 114 bytes of CMOS RAM.

Keyboard Connector

- PS/2 keyboard interface and PS/2 mouse interface.

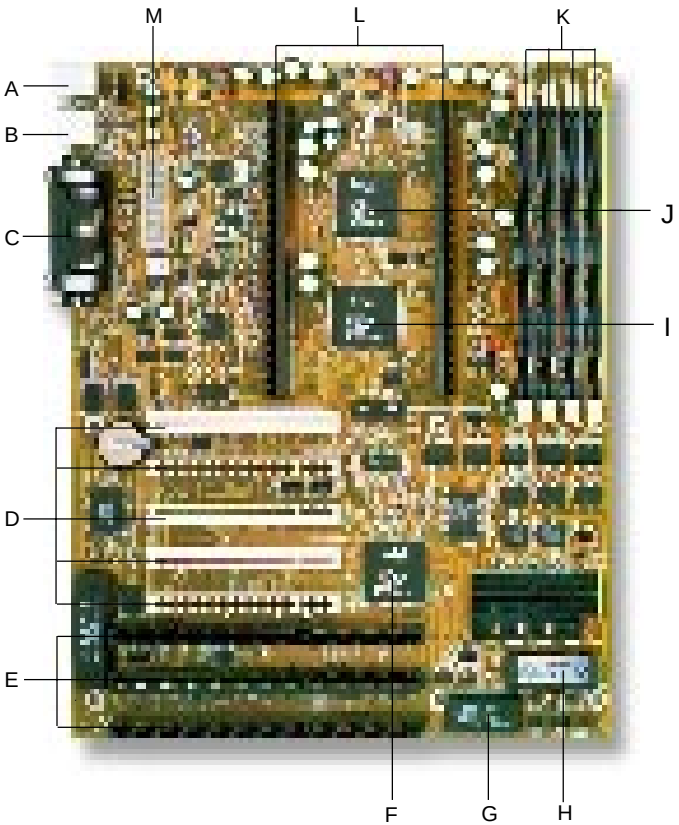
Dimension

- ATX Form Factor: 30cm(L) x 24.5cm(W) x 6 layer PCB.
- Double deck I/O connectors, compatible with Intel® Venus Motherboard.

Mounting

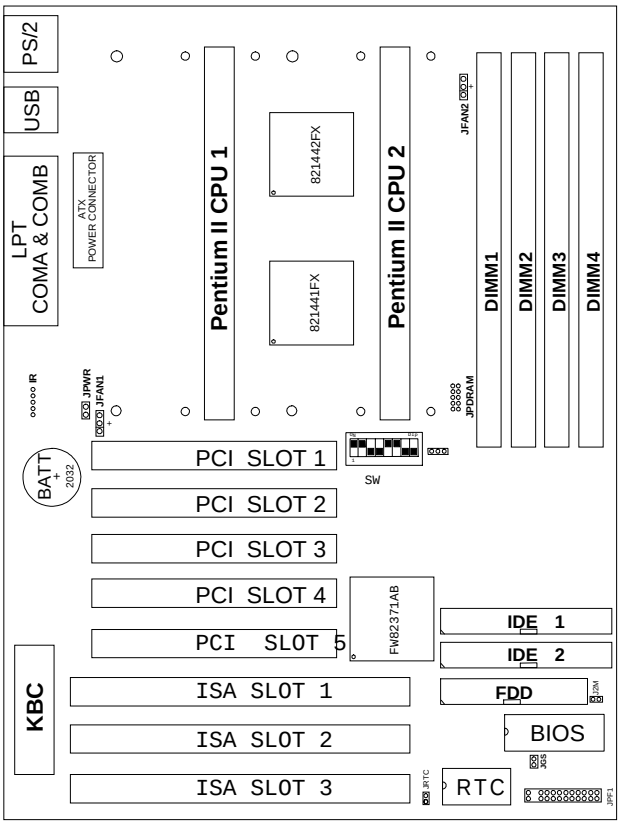
- 8 mounting holes.

1.2 Parts of the Motherboard



A	**PS/2 Port**	**Top: Mouse**
		Bottom: Keyboard
B	**USB Port**	**Top: Port 1**
		Bottom: Port 2
C	**COM/LPT Ports**	**Top: Parallel Port**
		Bottom: Two Serial Ports
D	**Five 32-Bit PCI SLOTs**	
E	**Three 16-Bit ISA SLOTs**	
F	**PCIset 82371SB PIIX 3**	
G	**Non-Volatile RTC**	
H	**Flash BIOS**	
I	**PCIset 82441FX**	
J	**PCIset 82442FX**	
K	**Four 168-PIN DIMM SOCKETs**	
L	**Two Slot 1 for Dual Pentium II Processor**	
M	**ATX 20-Pin Power Connector**	

1.3 Mainboard Layout



MS-6110

Chapter 2

HARDWARE INSTALLATION

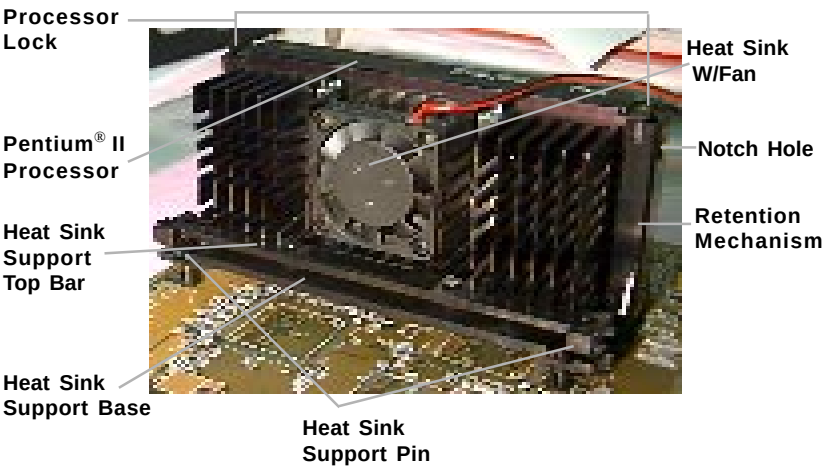
2.1 Central Processing Unit: CPU

The mainboard operates with **Intel® Pentium® II Processor** with MMX™ Technology**.** The mainboard provides Two CPU Slot called Slot 1 for easy CPU installation, a DIP switch (JCPU1) 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 Procedure

There are two kinds of Pentium® II Processor that is currently used. The OEM Pentium® II Processor and the Boxed Pentium® II Processor. OEM Pentium® II Processor has no Heat Sink, Fan and Heat Sink Support, while the Boxed Pentium® II Processor is provided with Heat Sink w/ fan and Heat Sink Support.

A. OEM Pentium® II Processor Installation Procedures



Required Things:

Pentium® II Processor - Processor.

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

***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 attach to the **Pentium® II Processor** with metal clip.

Note: * Provided by MSI mainboard.
** Provided by Special request.

HSSBASE

RM

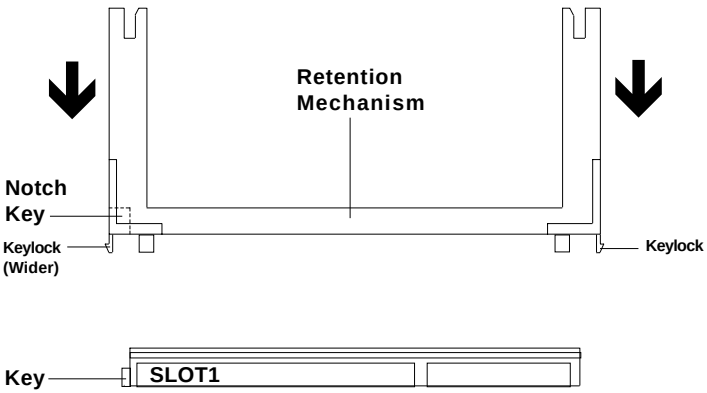
HSSPIN

HSSTOP

Step 1: Place the bubble bag that came with your mainboard or use any soft material like Styrofoam underneath the mainboard. Find a flat surface to do the installation.

Step 2: Install the Retention Mechanism.

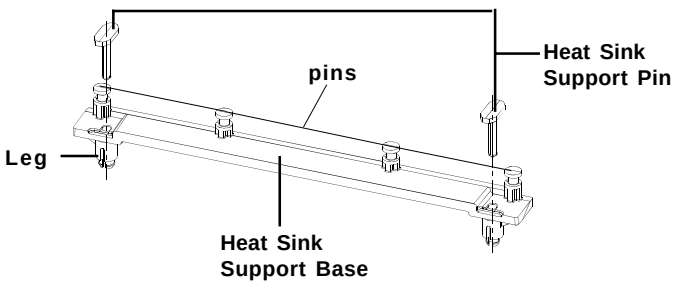
Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for the proper direction. Then, insert the Two Keylock of the Retention Mechanism into the two holes on the sides of Slot 1. Take note that one hole is wider than the other. The Retention Mechanism will only fit in one direction.



Push the Retention Mechanism onto the mainboard, until you hear a "click" sound. Check for a perfect fit.

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.



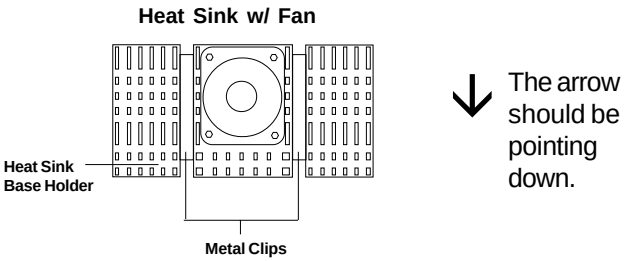
Push the Heat Sink Support Base onto the mainboard, until you hear a click sound. Check for a perfect fit.

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.

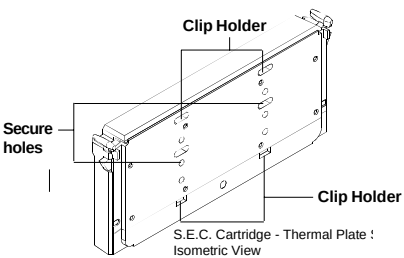
Step 5: Install the Heat Sink with Fan to the Processor.

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

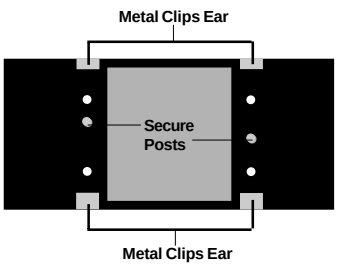


In case the metal clips are detached from the Heat Sink, re-attach them. Look for the arrow on the metal clip. This arrow should be pointing down and aligned with the Heat Sink Support Base Holder.

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.

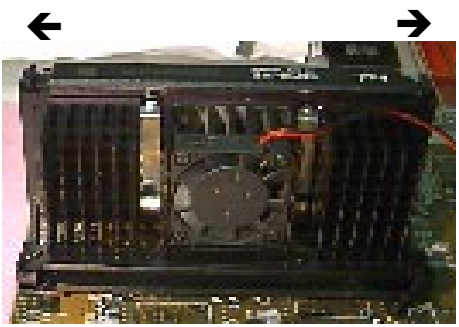
Step 6: Install the Processor.

Unlock the Processor by pushing in the Processor Locks.

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

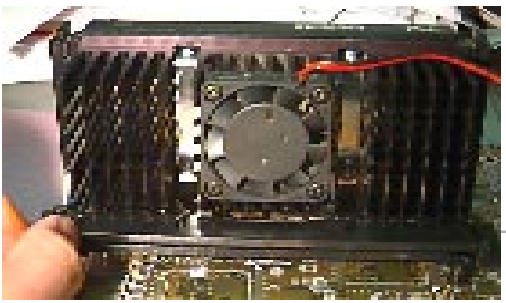
Step 7: Lock the Processor Locks.

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.



The installation is now complete.

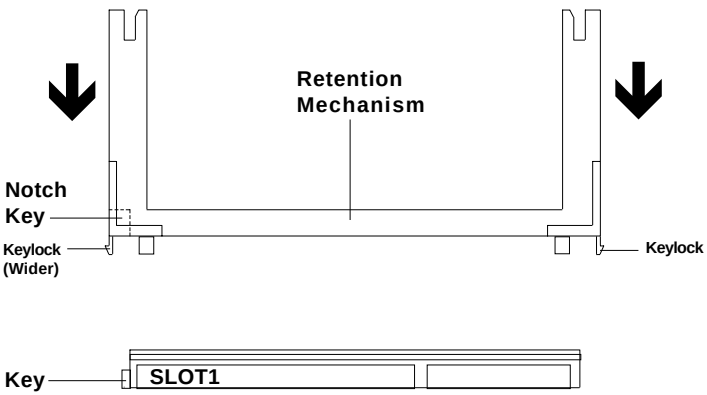
B. Boxed Pentium® II Processor Installation Procedures

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 a Boxed Pentium™ II Processor, all you need is the Retention Mechanism.

Step 1: Place the bubble bag that came with your mainboard or use any soft material like Styrofoam underneath the mainboard. Find a flat surface to do the installation.

Step 2: Install the Retention Mechanism.

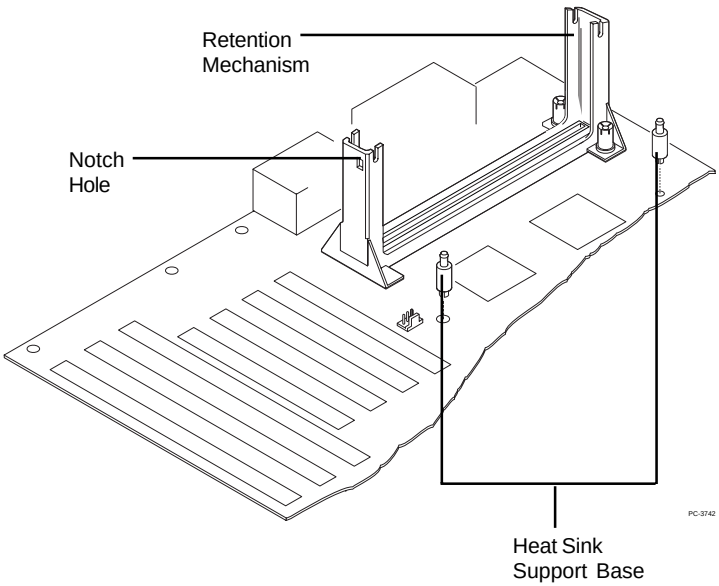
Look for the key on Slot 1, and match it with the Notch Key on the Retention Mechanism for the proper direction. Then, insert the Two Keylock of the Retention Mechanism into the two holes on the sides of Slot 1. Take note that one hole is wider than the other. The Retention Mechanism will only fit in one direction.



Push the Retention Mechanism onto the mainboard, until you hear a "click" sound. Check for a perfect fit.

Step 3: Install the Heat Sink Support Base.

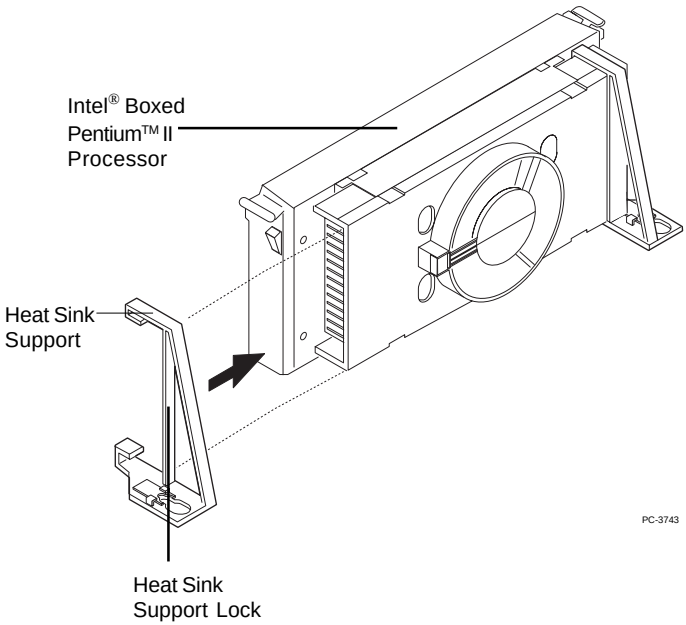
Look for the 2 holes across Slot 1, and match it with the 2 Heat Sink Support Base. Take note that one hole/base is bigger than the other.



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

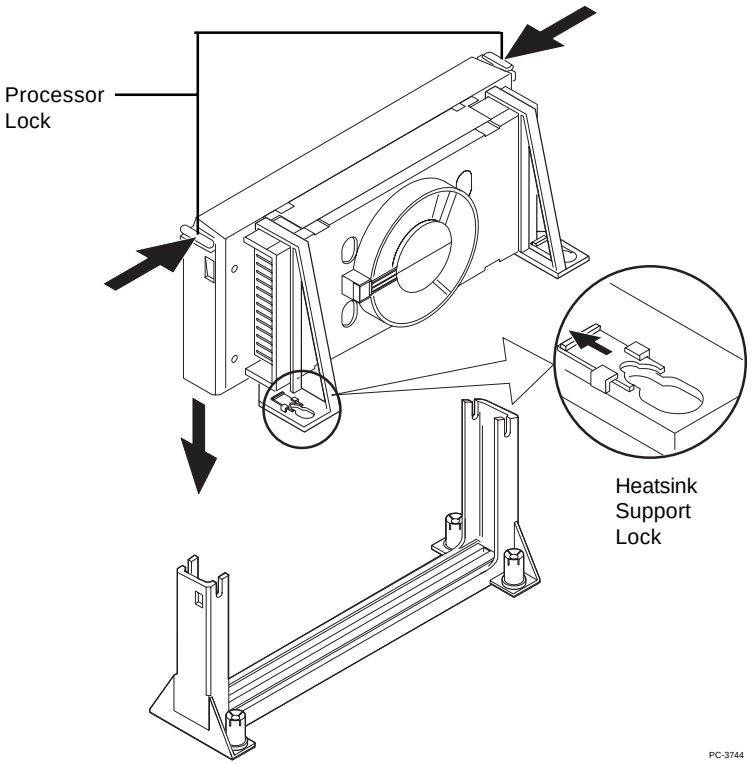
Step 4: Install the Heat Sink Support.

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.

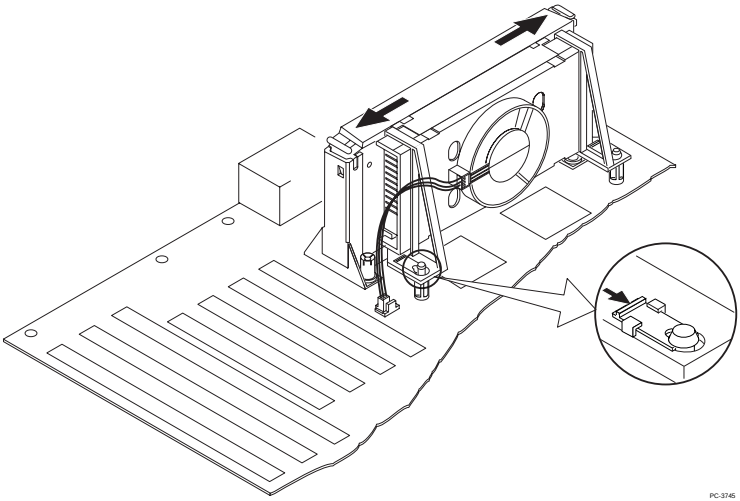


Step 5: Unlock the Processor Locks and Heat Sink Support Locks.

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.

2.1-2 CPU Core Speed Derivation Procedures

1. The DIP switch JCPU1 (1, 2, 3, and 4) is used to adjust the CPU clock frequencies.

JCPU1				CPU
1	**2**	**3**	**4**	**CLOCK**
OFF	OFF	ON	ON	60MHz
ON	ON	OFF	OFF	66MHz

2. The DIP switch JCPU1 (5, 6, 7, and 8) 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:

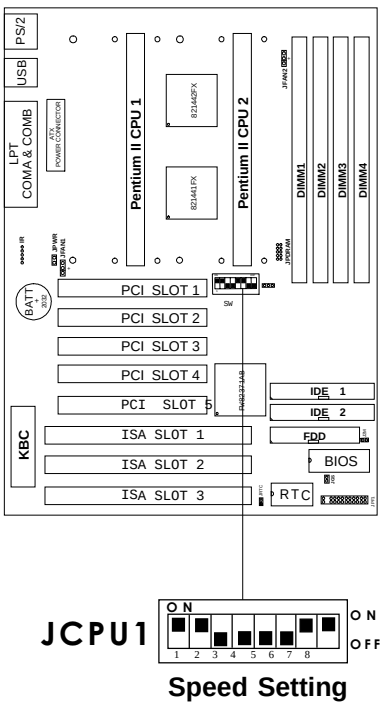
If CPU Clock = 66MHz
Core/Bus ratio = 3.5x
then CPU core speed = Host Clock x Core/Bus ratio
= 66.6MHz x 7/2
= 233MHz

JCPU1				CPU
5	**6**	**7**	**8**	**CORE/BUS RATIO**
ON	ON	ON	ON	2x
OFF	ON	ON	ON	2.5x
ON	OFF	ON	ON	3x
OFF	OFF	ON	ON	3.5x
ON	ON	OFF	ON	4x
OFF	ON	OFF	ON	4.5x
ON	OFF	OFF	ON	5x (Reserved)
OFF	OFF	OFF	OFF	5.5x (Reserved)
ON	ON	ON	ON	6x (Reserved)
OFF	ON	ON	ON	6.5x (Reserved)

3. The PCI Bus Clock is the CPU Clock Frequency divided by 2.

2.1-3 CPU Speed Setting: JCPU1

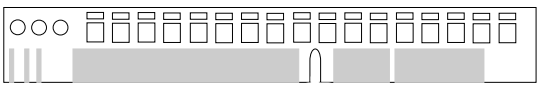
To adjust the speed of the CPU, you must know the specification of your CPU (*always ask the vendor for CPU specification*). Then look at **Table 2.1 (Intel® 233 ~ 266MHz Pentium® II Processor)** for proper setting.



Speed Setting

2.1-4 CPU Terminator

The CPU terminator is used, when only one CPU is installed. If only one CPU is installed. You must always install the CPU terminator on the empty slot. For Example: If you install the CPU on the 1st slot, then you must install the CPU terminator on the 2nd slot or vice versa.



CPU Terminator

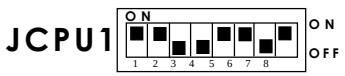
Important:
To use Dual CPU, you must use the same CPU speed: which means that if you install 233MHz in the 1st CPU slot, then you must also install 233MHz on the 2nd slot.

Table 2.1 Intel® 233 ~ 266MHz Pentium® II Processor

Intel® Pentium® II Processor is currently available in two speed setting: 233MHz and 266MHz . For future reference, refer to the CPU core speed derivation procedure on **Section 2.1-2**.

SPEED SETTING

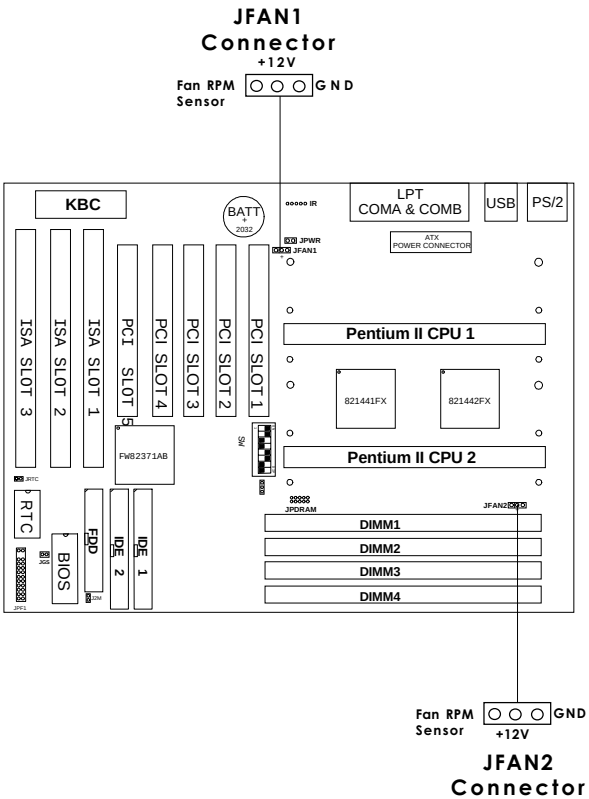
Intel® 233MHz Pentium® II Processor (66MHz x 3.5x)



Intel® 266MHz Pentium® II Processor (66MHz x 4x)

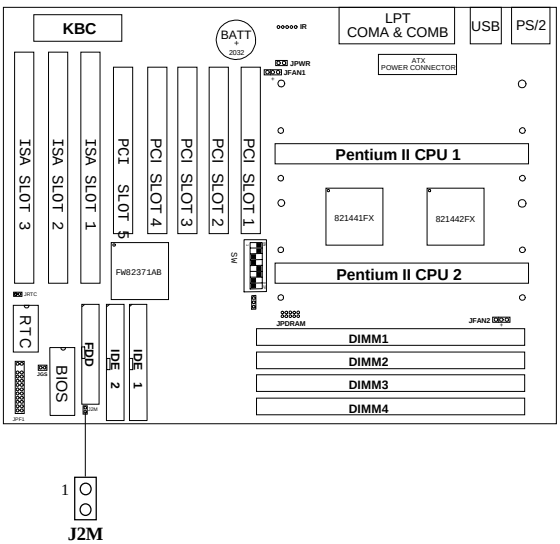
2.1-5 CPU Fan Power Connector: JFAN1 & JFAN2

This connector supports CPU cooling fan with +12V. It supports both two and three pin head connector. When connecting the wire to the connector, always take note that the Red wire is positive and should be connected to the +12V. While the Black wire is ground andshould be connected to GND.



Note: MS6110 supports Fan Speed Sensor function. So if you're going to use this function, you must use a fan with a Fan RPM Sensor.

2.2 Flash ROM Programming Voltage: J2M



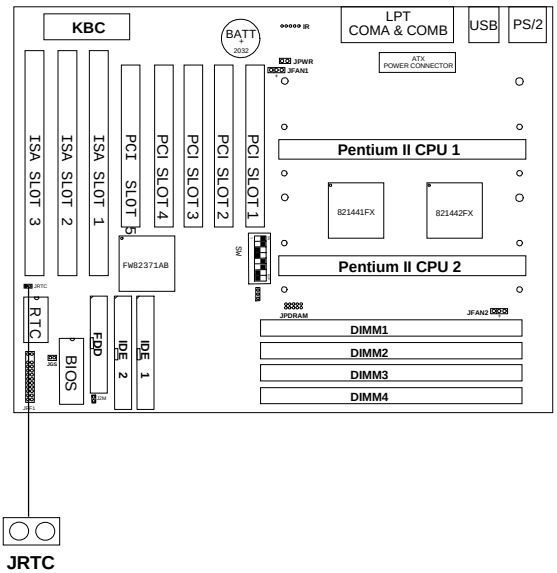
+5V
Default

+12V

Note: SST & Winbond Flash ROM are set in +5V
MXIC & Intel Flash ROM are set in +12V.

2.3 CMOS RAM Clear: JRTC

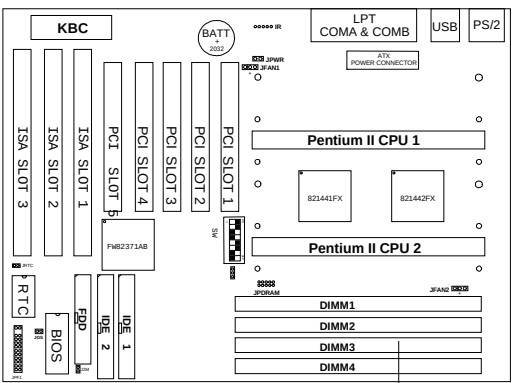
This jumper is for clearing the CMOS data. To do this, turn off the system, short JRTC and then open it again.

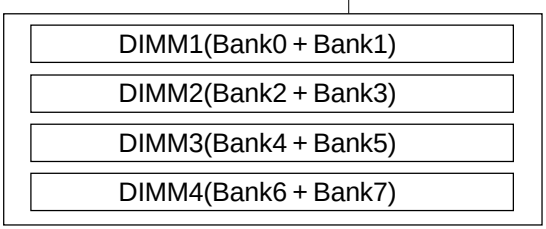


2.4 Memory Installation

2.4-1 Memory Bank Configuration

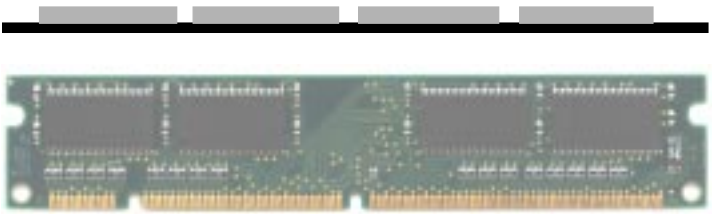
The system board supports a maximum of 1 GB of memory: It provides Four 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB up to 256 MB of memory. The memory module can be either FP (Fast Page) or EDO (Extended Data Output) Mode DRAM. A DIMM consist of two Banks and may have a maximum of 256 MB of memory.



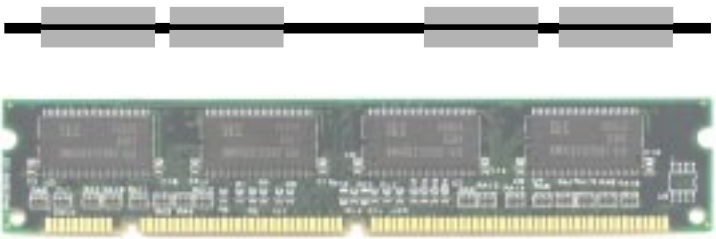


Note: EDO & SDRAM are not supported.

A. How to install a DIMM Module



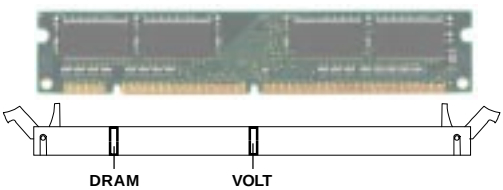
Single Sided DIMM



Double Sided DIMM

1. The DIMM slot has two Notch Keys called "VOLT and DRAM" , so the DIMM memory module can only fit in one direction.

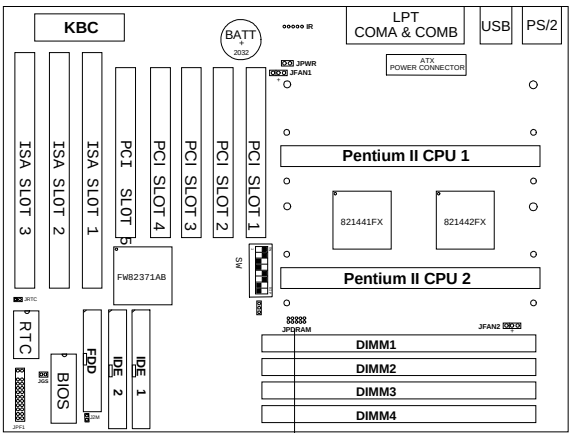
2. Insert the DIMM memory module vertically into the DIMM slot then push it in.

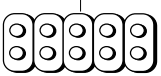


3. Close the plastic clip at the side of the DIMM slot.

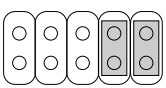
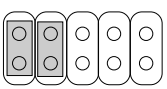
Note: You can use a 5 volt or a 3.3 volt DIMM module (EDO or FP). However, take note that you cannot mixed 5 volt with 3 volt DIMM module.

A.1 DIMM Power Voltage Selector : JPDRAM





JPDRAM

DIMM Voltage	JPDRAM
5V	
3.3V	

DIMM Power Level : 3.3V or 5V

2.2-1 Memory Population Rules

1. You can use any kind of DIMM **except for SDRAM and BEDO.**
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, DIMM3 or DIMM 4 in any order.
4. The DRAM addressing and the size supported by the mainboard is shown below.

Memory Mapping Options

DRAM Tech.	Memory Org.	Addressing	Address Size	MB/DIMM	
				Single Side	Double Side
4M	1M x 4	Symmetric	10 x 10	8MB	16MB
16M	1M x 16	Symmetric	10 x 10	8MB	16MB
	2M x 8	Asymmetric	11 x 10	16MB	32MB
	4M x 4	Symmetric	11 x 11	32MB	64MB
64M	4M x 16	Symmetric	11 x 11	32MB	64MB
	8M x 8	Asymmetric	12 x 11	64MB	128MB
	16M x 4	Symmetric	12 x 12	128MB	256MB

2.5 Case Connector: JFP1

The Turbo LED, Hardware Reset, Key Lock, Power LED, Power Saving Switch, Speaker and HDD LED are all connected to the JFP connector block.

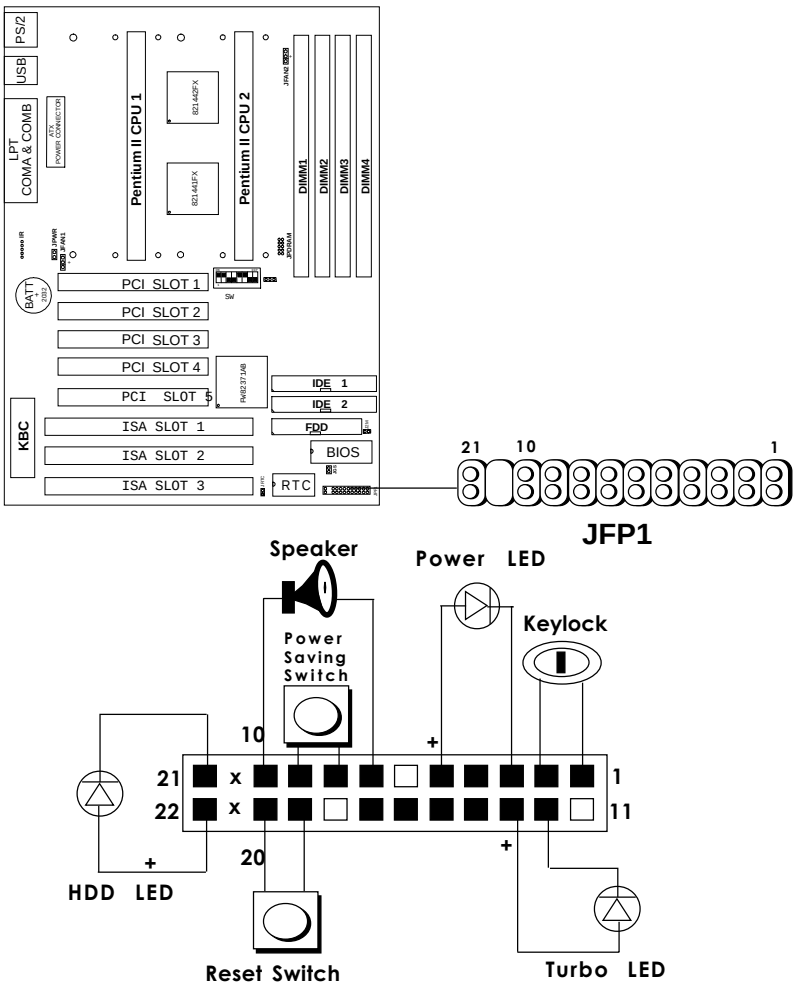


Figure 2.1

2.5-1 Turbo LED

The Turbo LED is always lit. You can connect the Turbo LED from the system case to this pin. (See Figure 2.1)

2.5-2 Hardware Reset

Reset switch are use to reboot the system rather than turning the power ON/ OFF. You can connect the Reset switch from the system case to this pin. Avoid rebooting while the HDD LED is lit. (See Figure 2.1)

2.5-3 Keylock

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock. (See Figure 2.1)

2.5-4 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. (See Figure 2.1)

2.5-5 Speaker

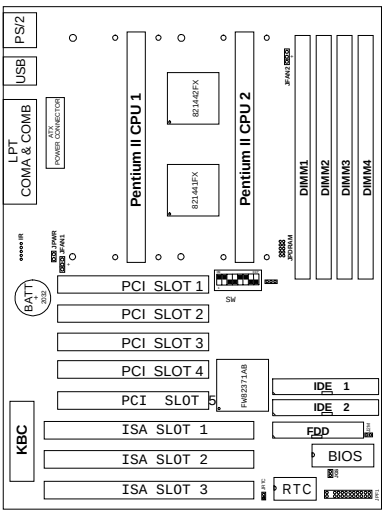
Speaker from the system case are connected to this pin. (See Figure 2.1)

2.5-6 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. (See Figure 2.1).

2.6 Power Saving Switch Connector: JGS

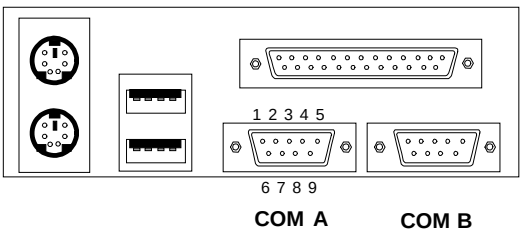
Attach a power saving switch to **JGS**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



JGS

2.7 Serial Port Connectors: COM A & COM B

The mainboard has two 9-pin male DIN connectors for serial ports COM A and COM B. These two ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into these connectors.

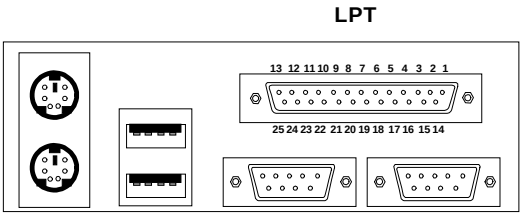


PIN DEFINITION

Pin #	Definition
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)

2.8 Parallel Port Connectors: 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:

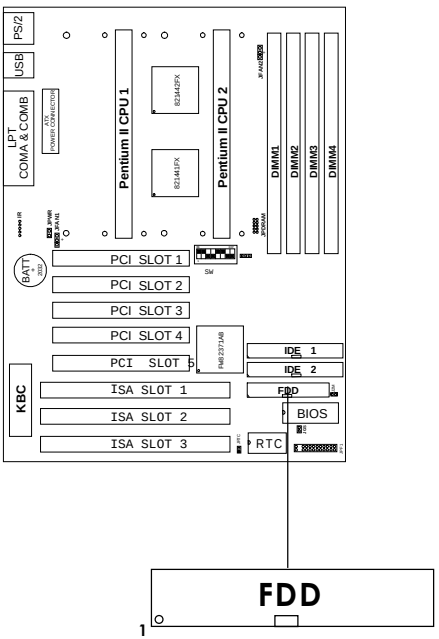


PIN DEFINITION

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

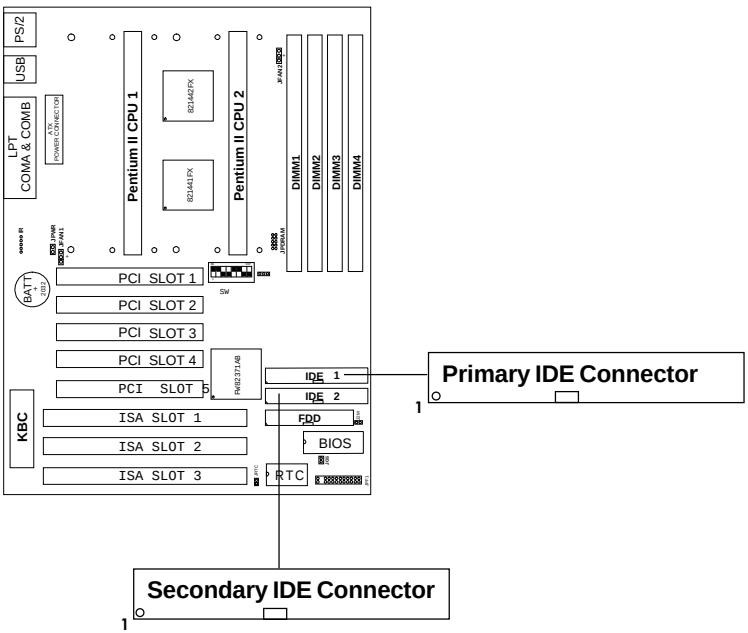
2.9 Floppy Disk Connector: FDD

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



2.10 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides for two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four IDE devices like: Hard disk, CD-ROM, 120MB Floppy and other devices.



IDE1(Primary IDE connector)

The first hard disk should always be connected to IDE1. IDE1 can connect a Master and a Slave drive.

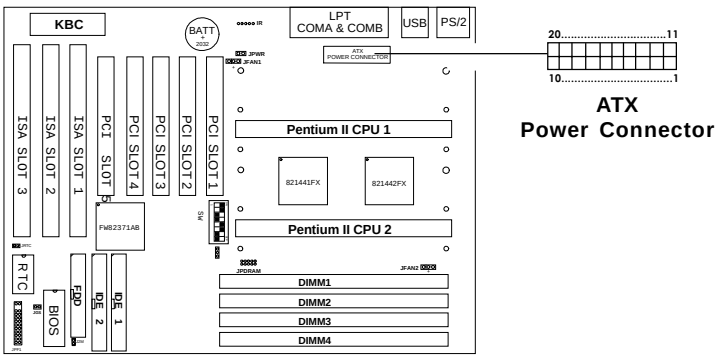
IDE2(Secondary IDE connector)

IDE2 can connect a Master and a Slave drive.

2.11 Power Supply

2.11-1 ATX 20-pin Power Connector: JPWR20

This type of connector already supports the remote ON/OFF function. You need to connect the **Remote Power On/OFF switch JPWR**.

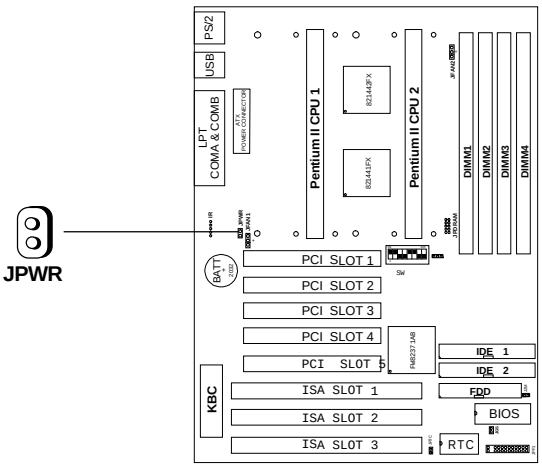


ATX Power Connector Pin Description

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

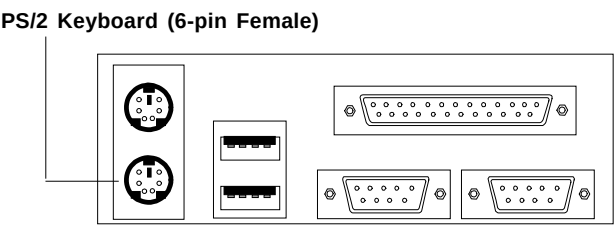
2.11-2 Remote Power On/Off Switch: JPWR

Connect to a 2-pin push button switch. Every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON and On to OFF. This is used for ATX type power supply.



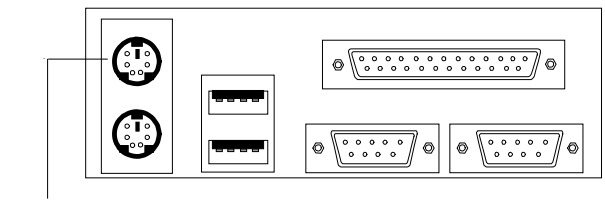
2.12 Keyboard Connector: PSKBC

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



2.13 Mouse Connector: PSMSC

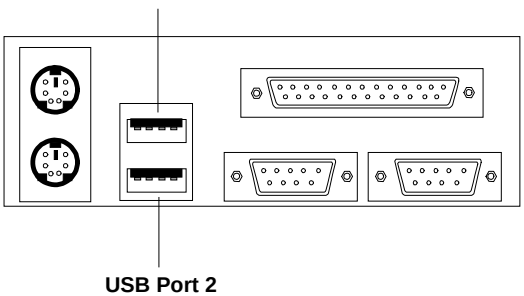
The mainboard provides a standard PS/2 style mouse mini DIN connector for attaching a PS/2 style mouse. You can plug a PS/2 style mouse directly into this connector. The connector location and pin definition as shown below:



PS/2 Mouse (6-pin Female)

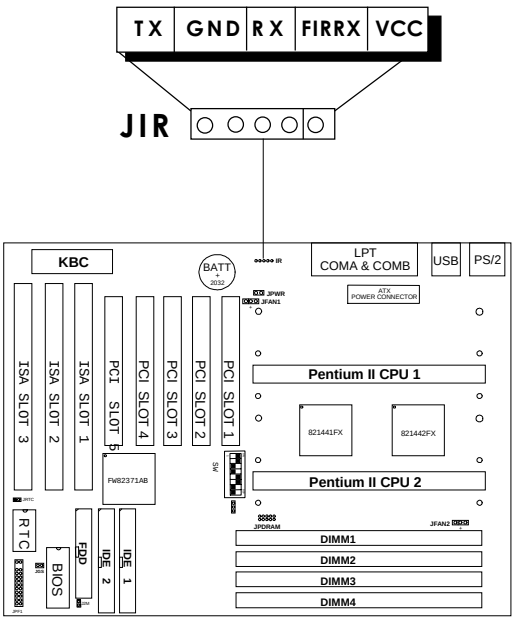
2.14 USB Connector: USB

This 10-pin connector supports USB(Universal Serial Bus) devices. This function is a reserved function.



2.15 IrDA Infrared Module Connector: JIR

The mainboard provides a 5-pin infrared connector(IR) for IR module. This connector is for optional wireless transmitting and receiving infrared module. You must configure the BIOS setting for this to function properly.



Chapter 3

AMI BIOS USER GUIDE

The system configuration information and chipset register information is stored in the CMOS RAM. This information is retained by a battery when the power is off. Enter the BIOS setup (if need) to modify this information.

The following pages will describe how to enter BIOS setup, and all about options.

3.1 Enter BIOS Setup

Enter the AMI setup Program's Main Menu as follows:

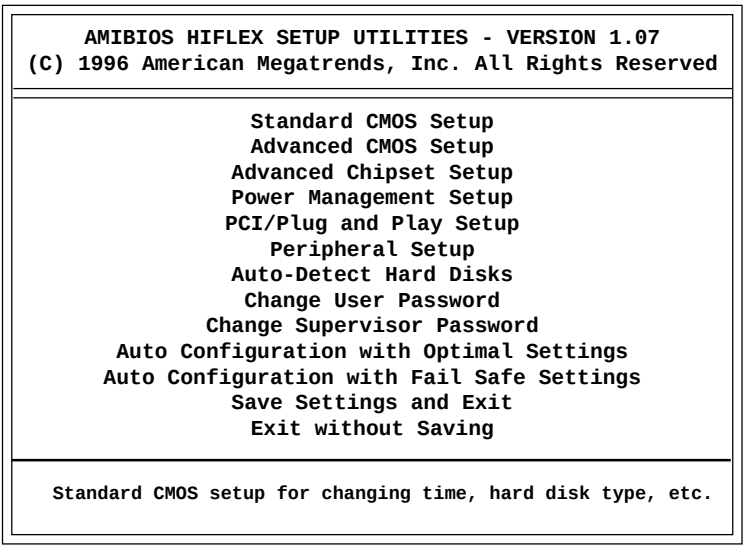
1. Turn on or reboot the system. The following screen appears with a series of diagnostic check.

```
AMIBIOS (C) 1996 American Megatrends Inc.
AGIOMS VXXX XXXXXX

Hit <DEL> if you want to run setup




(C) American Megatrends Inc.
61-XXXX-001169-00111111-071592-i82440FX-H
```

2. When the "Hit <DEL>" message appears, press <DEL> key to enter the BIOS setup screen.

3. After pressing <DEL> key, the BIOS setup screen will appear.

Note: *If you don't want to modify CMOS original setting, then don't press any key during the system boot.*



4. Use the <Up> and <Down> key to move the highlight scroll up or down.

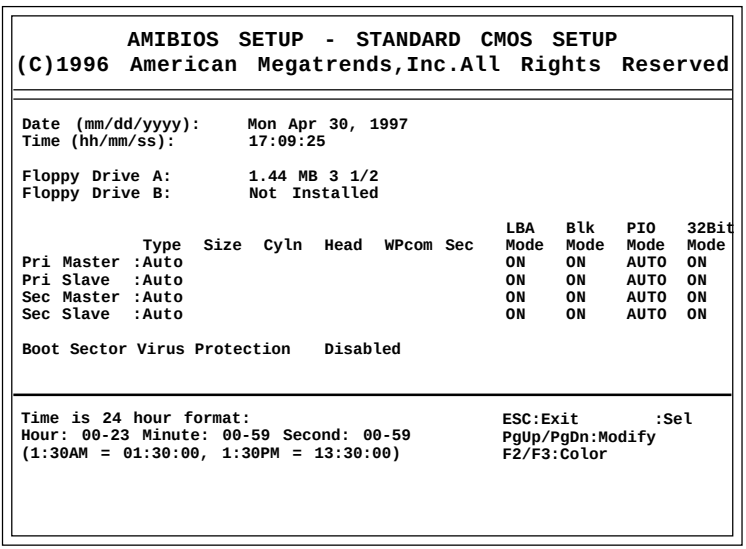
5. Use the <ENTER> key to select the option.

6. To exit, press <ESC>. To save and exit, press <F10>.

7. Section 3.2 to 3.7 will explain the option in more details.

3.2 Standard CMOS Setup

1. Press <ENTER> on "Standard CMOS Setup" of the main menu screen .

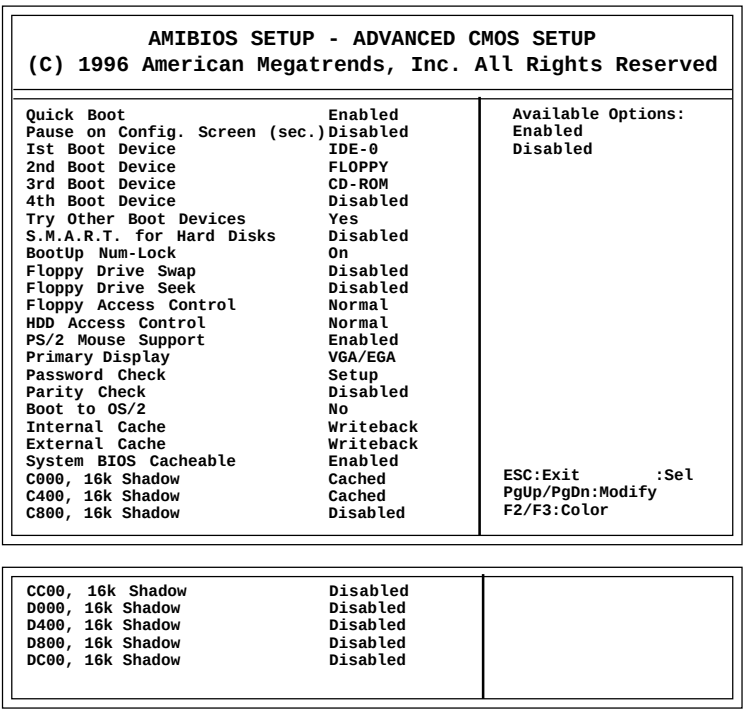


2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.

3. After you have finished with the Standard CMOS Setup, press <ESC> to go back to the main menu.

3.3 Advanced CMOS Setup

1. Press <ENTER> on "Advanced CMOS Setup" of the main menu



```
          AMIBIOS SETUP - ADVANCED CMOS SETUP
(C) 1996 American Megatrends, Inc. All Rights Reserved

Quick Boot                      Enabled        Available Options:
Pause on Config. Screen (sec.)  Disabled       Enabled
Ist Boot Device                 IDE-0          Disabled
2nd Boot Device                 FLOPPY
3rd Boot Device                 CD-ROM
4th Boot Device                 Disabled
Try Other Boot Devices          Yes
S.M.A.R.T. for Hard Disks       Disabled
BootUp Num-Lock                 On
Floppy Drive Swap               Disabled
Floppy Drive Seek               Disabled
Floppy Access Control           Normal
HDD Access Control              Normal
PS/2 Mouse Support              Enabled
Primary Display                 VGA/EGA
Password Check                  Setup
Parity Check                    Disabled
Boot to OS/2                    No
Internal Cache                  Writeback
External Cache                  Writeback
System BIOS Cacheable           Enabled
C000, 16k Shadow                Cached         ESC:Exit        :Sel
C400, 16k Shadow                Cached         PgUp/PgDn:Modify
C800, 16k Shadow                Disabled       F2/F3:Color
CC00, 16k Shadow                Disabled
D000, 16k Shadow                Disabled
D400, 16k Shadow                Disabled
D800, 16k Shadow                Disabled
DC00, 16k Shadow                Disabled
```

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.

3. After you have finished with the Advanced CMOS Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Quick Boot

Set this option to Enabled to permit AMIBIOS to boot within 5 seconds. This option replaces the old ABOVE 1 MB Memory Test option. The Optimal default setting is Enabled. The Fail-Safe default setting is Disabled.

Pause on Config. Screen (Sec.)

This option sets the time for pausing the OS screen during boot-up sequence. The settings are 0- 15 Sec. or Disabled. The Optimal and Fail-Safe default settings are Disabled.

1st Boot Device/2nd Boot Device/3rd Boot Device/ 4th Boot Device

This option sets the sequence of boot drives.

The settings are:

IDE0	The system will boot from the first HDD.
IDE1	The system will boot from the Second HDD.
IDE2	The system will boot from the Third HDD.
IDE3	The system will boot from the Fourth HDD.
F(optical)	The system will boot from LS-120(120M Floppy).
SCSI	The system will boot from the SCSI.
Network	The system will boot from the Network drive.
CD-ROM	The system will boot from the CD-ROM.
Disable	Disable this sequence.

Try other Boot Devices

This option sets the device boot, if all the Four Boot Devices failed.

S.M.A.R.T. for Hard Disks

This option sets the SMART Function for the Hard Disk. The Hard Disk has to have SMART function for this feature to take effect.

Boot up Num Lock

When this option is set to Off, AMIBIOS turns off the Num Lock key when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard. The settings are On or Off. The optimal default and Fail-Safe default settings are On.

Floppy Drive Swap

Set this option to Enabled to specify that floppy drives A: and B: are swapped. The setting are Enabled and Disabled. The Optimal and Fail-Safe default settings are Disabled.

Floppy Drive Seek

When this option is set to Enabled, AMIBIOS performs a Seek command on floppy drive A: before booting the system. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Disabled.

Floppy Access Control

This option sets the Floppy to Read-only or Normal(Full Access).

HDD Access Control

This option sets the HDD to Read-only or Normal(Full Access). During Read-only, if you try to write on the HDD the system will halt.

PS/2 Mouse Support

When this option is set to Enabled, AMIBIOS supports a PS/2-type mouse. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Enabled.

Primary Display

This option configures the primary display subsytem in the computer. The settings are Mono(monochrome), 40CGA, 80CGA or VGA/EGA. The optimal and Fail-Safe default settings are VGA/EGA.

Password Check

This option specifies the type of AMIBIOS password protection that is implemented. The Optimal and Fail-Safe default settings are Setup.

Parity Check

Set this option to Enabled to use the Parity Check function. The DIMM module need to have parity bit for this function to work.

Boot to OS/2

Set this option to Enabled to permit the BIOS to run properly, if OS/2 is to be used with > 64MB of DRAM. The settings are Enabled or Disabled. The Optimal and Fail-safe default settings are Disabled.

Internal Cache/External Cache

This option selects the type of caching algorithm used by AMIBIOS and the CPU for L1 cache memory(internal/external to the CPU). The settings are Writeback - a writeback algorithm is used, Write-through - a write-through algorithm is used or Disabled - AMIBIOS does not specify the type of caching algorithm. The algorithm is set by the CPU. The Optimal and Fail-Safe default settings are Writeback.

System BIOS Cacheable

AMIBIOS always copies the system BIOS from ROM to RAM for faster execution. Set this option to Enabled to permit the contents of the F0000h RAM memory segment to be written to and read from cache memory. The settings are Enabled or Disabled. The Optimal default setting is Enabled. The Fail-Safe default setting is Disabled.

C000, 16K Shadow/C400, 16k Shadow

These options specify how the contents of the video ROM are handled. The settings are:

Disabled - the Video ROM is not copied to RAM.

Cached - the contents of the video ROM are from C0000h - C7FFFh are not only copied from ROM to RAM; it can also be written to or read from cache memory.

Shadow - the Contents of the video ROM are from C0000h - C7FFFh are copied(shadowed) from ROM to RAM for faster execution.

The Optimal and Fail-Safe default setting is Cached.

C800, 16k Shadow/CC00, 16k Shadow/D000, 16K Shadow/D400, 16k Shadow/D800, 16k Shadow/DC00, 16K Shadow

These options specify how the contents of the adaptor ROM named in the option title are handled. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards. The settings are;

Disabled - The specified ROM is not copied to RAM.

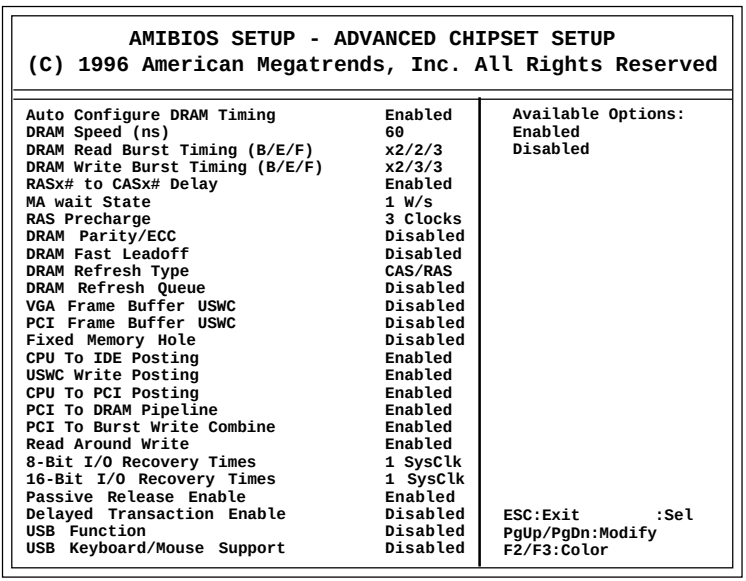
Cache - The contents of the ROM area are not only copied from ROM to RAM for faster execution, it can also be written to or read from cache memory.

Shadow - The contents of the ROM area are copied from ROM to RAM for faster execution.

The Optimal and Fail-Safe default settings are Disabled.

3.4 Advanced Chipset Setup

1. Press <ENTER> on "Advanced Chipset Setup" of the main menu screen.



```
        AMIBIOS SETUP - ADVANCED CHIPSET SETUP
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Auto Configure DRAM Timing          Enabled     Available Options:
DRAM Speed (ns)                     60          Enabled
DRAM Read Burst Timing (B/E/F)      x2/2/3      Disabled
DRAM Write Burst Timing (B/E/F)     x2/3/3
RASx# to CASx# Delay                Enabled
MA wait State                       1 W/s
RAS Precharge                       3 Clocks
DRAM  Parity/ECC                    Disabled
DRAM Fast Leadoff                   Disabled
DRAM Refresh Type                   CAS/RAS
DRAM  Refresh Queue                 Disabled
VGA Frame Buffer USWC               Disabled
PCI Frame Buffer USWC               Disabled
Fixed Memory Hole                   Disabled
CPU To IDE Posting                  Enabled
USWC Write Posting                  Enabled
CPU To PCI Posting                  Enabled
PCI To DRAM Pipeline                Enabled
PCI To Burst Write Combine          Enabled
Read Around Write                   Enabled
8-Bit I/O Recovery Times            1 SysClk
16-Bit I/O Recovery Times           1 SysClk
Passive Release Enable              Enabled
Delayed Transaction Enable          Disabled    ESC:Exit        :Sel
USB Function                        Disabled    PgUp/PgDn:Modify
USB Keyboard/Mouse Support          Disabled    F2/F3:Color
```

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.

3. After you have finished with the Advanced Chipset Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Auto Configure DRAM Timing

Choose Enabled(default) will automatically configure the DRAM timing depends on "DRAM Speed" selection. Choose disable to customize setup.

DRAM Speed (ns)

This option specifies the RAS access time (in nanoseconds) for the DRAM used in the computer for system memory. The settings are 50,60 or 70. The Optimal default setting is 60 and the Fail-Safe default setting is 70.

DRAM Read Burst Timing (B/E/F)

Choose DRAM read burst timing for the customize setup.
B stand for BEDO DRAM, E stand for EDO DRAM and F stand for FAST PAGE DRAM.

DRAM Write Burst Timing (B/E/F)

Choose DRAM write burst timing for the customize setup.

RASx# to CASx# Delay

Choose Enabled will insert 3 clock delay between the RASx# and CASx#. There will be 2 clock delay if disabled (default) is chosen.

MA Wait State

Choose Enabled, one additional wait state is inserted before the assertion of the first MA and CAS/RAS assertion during DRAM read or write leadoff cycles.

RAS Precharge

Choose the DRAM's RASx# precharge time.

DRAM Parity/ECC

Set this option to Enabled for ECC(Error Checking and Correction) DRAM integrity mode. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Note: *To enable this function, you have to used DIMM w/Parity.*

DRAM Fast Leadoff

Choose Enabled, one additional wait state is added to the DRAM leadoff timing for page/row miss cycles. The leadoff controls the MA setup to the first CASx# assertion.

DRAM Refresh Type

This option sets the type of system memory refresh that is used in the computer. The settings are RAS only or CAS/RAS (CAS before RAS refresh). The Optimal and Fail-Safe default settings are CAS/RAS.

DRAM Refresh Queue

Choose Enabled, the system will provide 4-deep refresh queue. All refresh request are queued, with the 4th refresh request being the priority request. All refresh requests are priority when the refresh queue is Disabled.

Fixed Memory Hole

This option allows the end user to specify the location of a memory hole. The cycle matching the selected memory hole will be passed to the ISA bus. If Enabled, the selected hole is not remapped.

CPU To IDE Posting

Set this option to Enabled to enable posted messages from the CPU to the IDE controller. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Enabled.

USWC Write Posting

Set this option to Enabled to use USWC(Uncacheable, Speculatable, Write-Combined) memory. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disable.

CPU To PCI Posting

Set this option to Enabled to give priority to posted messages from the CPU to the PCI bus. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Enabled.

PCI to DRAM Pipeline

Set this option to Enabled the pipeline from the PCI bus to system memory. The settings are Enabled or Disabled. The Optimal and Fail-Safe Default settings are Enabled.

PCI Burst Write Combine

Set this option to Enabled to allow write instructions to be combined in PCI Burst mode. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Enabled.

Read Around Write

Set this option to Enabled to allow read operations to bypass write operations in the memory controller. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Enabled.

8-Bit I/O Recovery Time / 16-Bit I/O Recovery Time

Choose the recovery time for 8-bit and 16-bit I/O cycles respectively.

USB Function

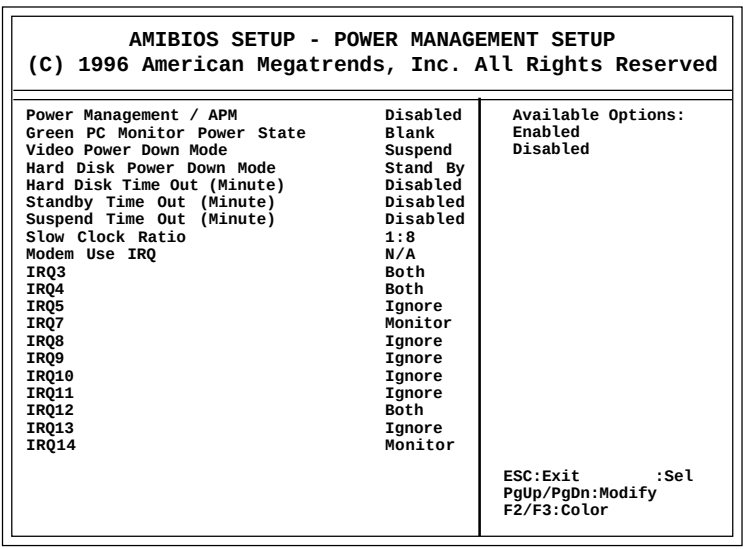
Set this option to Enabled or Disabled the on-chip USB controller. The Optional and Fail-Safe default settings are Disabled.

USB Keyboard/Mouse Support

Set this option to Enabled or Disabled USB keyboard/mouse. The Optional and Fail-Safe default settings are Disabled.

3.5 Power Management Setup

1. Press <ENTER> on "Power Management Setup" of the main menu screen.



```
        AMIBIOS SETUP - POWER MANAGEMENT SETUP
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Power Management / APM              Disabled    Available Options:
Green PC Monitor Power State        Blank       Enabled
Video Power Down Mode               Suspend     Disabled
Hard Disk Power Down Mode           Stand By
Hard Disk Time Out (Minute)         Disabled
Standby Time Out (Minute)           Disabled
Suspend Time Out (Minute)           Disabled
Slow Clock Ratio                    1:8
Modem Use IRQ                       N/A
IRQ3                                Both
IRQ4                                Both
IRQ5                                Ignore
IRQ7                                Monitor
IRQ8                                Ignore
IRQ9                                Ignore
IRQ10                               Ignore
IRQ11                               Ignore
IRQ12                               Both
IRQ13                               Ignore
IRQ14                               Monitor

                                    ESC:Exit        :Sel
                                    PgUp/PgDn:Modify
                                    F2/F3:Color
```

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.

3. After you have finished with the Power Management Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Power Management/APM

Set this option to Enabled to enable the Intel 82440FX ISA power management features and APM(Advanced Power Management). The settings are Enabled, Inst-On(instant-on) or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Green PC Monitor Power State

This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power savings state after the specified period of display inactivity has expired. The settings are Off, Standby, Suspend or Disabled. The Optimal and Fail-Safe default settings are Standby.

Video Power Down Mode

This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Standby.

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Disabled.

Hard Disk Timeout (Minutes)

This option specifies the length of a period of hard disk drive inactivity. When this length of time expires, the computer enters power-conserving state specified in the Hard Disk Power Down mode option (see the previous page). The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

Standby Timeout (Minute)

This option specifies the length of a period of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state. The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

Suspend Timeout (Minute)

This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

Slow Clock Ratio

This option specifies the speed at which the system clock runs in power saving states. The settings are expressed as a ratio between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state. The settings are 1:1, 1:2, 1:4, 1:8, 1:16, 1:32, 1:64 or 1:128. The Optimal and Fail-Safe defaults are 1:8.

IRQ3/IRQ4/IRQ5/RQ7/IRQ8/IRQ9/IRQ10/IRQ11/IRQ12/ IRQ13/IRQ14/IRQ15

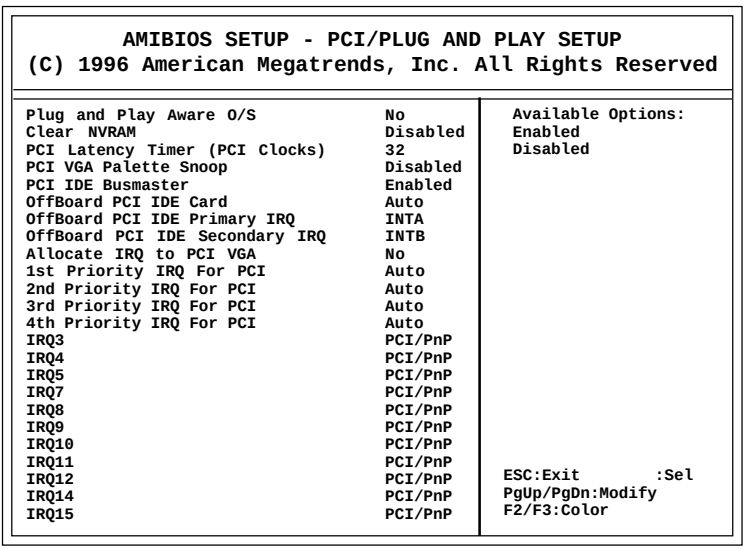
When set to Monitor, these options enable event monitoring on the specified hardware interrupt request line. If set to Monitor and the computer is in a power saving state, AMIBIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

AMIBIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

The settings for each of these options are Monitor or Ignore. The Optimal and Fail-Safe default settings are Disabled for all the above options except IRQ3, IRQ4, IRQ7, IRQ12, IRQ14 or IRQ15. The Optimal default settings for these options is Monitor.

3.6 PCI/Plug and Play Setup

1. Press <ENTER> on "PCI/Plug and Play Setup" of the main menu screen.



```
        AMIBIOS SETUP - PCI/PLUG AND PLAY SETUP
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Plug and Play Aware O/S                 No          Available Options:
Clear NVRAM                             Disabled    Enabled
PCI Latency Timer (PCI Clocks)          32          Disabled
PCI VGA Palette Snoop                   Disabled
PCI IDE Busmaster                       Enabled
OffBoard PCI IDE Card                   Auto
OffBoard PCI IDE Primary IRQ            INTA
OffBoard PCI IDE Secondary IRQ          INTB
Allocate IRQ to PCI VGA                 No
1st Priority IRQ For PCI                Auto
2nd Priority IRQ For PCI                Auto
3rd Priority IRQ For PCI                Auto
4th Priority IRQ For PCI                Auto
IRQ3                                    PCI/PnP
IRQ4                                    PCI/PnP
IRQ5                                    PCI/PnP
IRQ7                                    PCI/PnP
IRQ8                                    PCI/PnP
IRQ9                                    PCI/PnP
IRQ10                                   PCI/PnP
IRQ11                                   PCI/PnP
IRQ12                                   PCI/PnP     ESC:Exit        :Sel
IRQ14                                   PCI/PnP     PgUp/PgDn:Modify
IRQ15                                   PCI/PnP     F2/F3:Color
```
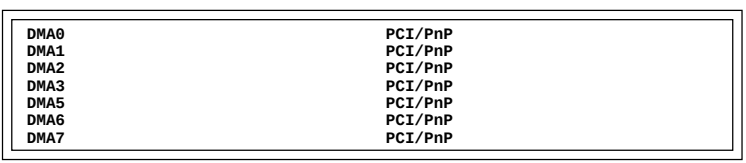



```
DMA0                                    PCI/PnP
DMA1                                    PCI/PnP
DMA2                                    PCI/PnP
DMA3                                    PCI/PnP
DMA5                                    PCI/PnP
DMA6                                    PCI/PnP
DMA7                                    PCI/PnP
```

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.

3. After you have finished with the PCI/Plug and Play Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Plug and Play Aware O/S

Set this option to Yes if the operating system in this computer is aware of and follows the Plug and Play specification. Currently, only Windows 95 is PnP-aware. The settings are Yes or No. The Optimal and Fail-Safe default settings No.

Clear NVRAM

During Enabled, this option will clear the NVRAM on every boot.

PCI Latency Timer (PCI Clocks)

This option specifies the latency timings (in PCI clocks) for all PCI devices on the PCI bus. The settings are 32, 64, 96, 128, 160, 192, 224 or 248. The Optimal and Fail-Safe default settings are 64.

PCI VGA Palette Snoop

When this option is set to Enabled, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and ISA) and the Bit settings are:

Disabled - Data read and written by the CPU is only dircted to the PCI VGA device's palette registers.

Enabled - Data read and written by the CPU is directed to the both the PCI VGA device's palette registers and the ISA VGA device palette registers, permitting the palette registers of both devices to be identical.

This option must be set to Enabled if an ISA adapter card requires VGA palette snooping. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Allocate IRQ to PCI VGA

Choose the IRQ to be assigned to the PCI VGA display adapter card. The Optimal and Fail-Safe default settings No.

PCI IDE BusMaster

Set this option to Enabled to specify that the IDE controller on the PCI local bus includes a bus mastering capability. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Offboard PCI IDE Card

This option specifies if an offboard PCI IDE controller adapter card is installed in the computer. You must specify the PCI expansion slot on the mainboard where the offboard PCI IDE controller is installed. If an offboard PCI IDE controller is used, the onboard IDE controller is automatically disabled. The settings are Auto(AMIBIOS automatically determines where the offboard PCI IDE controller adaper card is installed), Slot1, Slot2, Slot3 or Slot4. The Optimal and Fail-Safe settings are Auto.

In the AMIBIOS for the Intel 82440FX ISA chipset, this option forces IRQ14 and IRQ15 to a PCI slot on the PCI Local bus. This is necessary to support non-compliant ISA IDE controller adapter cards.

If an offboard PCI IDE controller adapter card is installed in the computer, you must also set the Offboard PCI IDE Primary IRQ and Offboard PCI IDE Secondary IRQ options.

Offboard PCI IDE Primary IRQ/ Offboard PCI IDE Secondary IRQ

These options specify the PCI interrupt used by the Primary (or Secondary) IDE channel on the offboard PCI IDE controller. The settings are Disabled, Hardwired, INTA, INTB, INTC or INTD. The Optimal and Fail-Safe default settings are Disabled.

DMA0/DMA1/DMA2/DMA3/DMA5/DMA6/DMA7

These options specify the bus that the specified DMA channel is used. These options allow you to reserve DMAs for legacy ISA adapter cards.

These options determine if AMIBIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the ESCD NVRAM. If more DMAs must be removed from the pool, the end user can use these options to reserve the DMA by assigning an ISA/EISA setting to it.

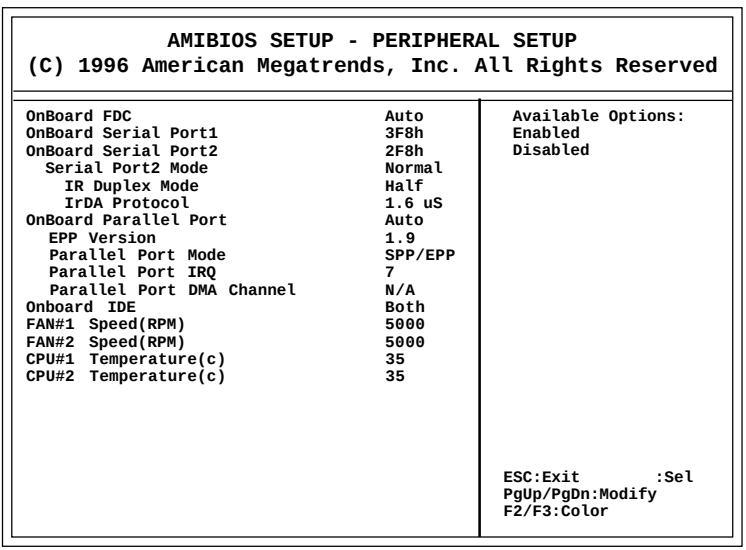
IRQ3/IRQ4/IRQ5/RQ7/IRQ9/IRQ10/IRQ11/IRQ14/IRQ15

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.

These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP. IRQ14 and 15 will not be available if the onboard 82440FX ISA PCI IDE is enabled. If all IRQs are set to ISA/EISA and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices. The settings are ISA/EISA or PCI/PnP. The Optimal and Fail-Safe default settings are IRQ3 through 7 are ISA/EISA. The Optimal and Fail-Safe default settings PCI/PnP.

3.7 Peripheral Setup

1. Press <ENTER> on "Peripheral Setup" of the main menu screen.



```
          AMIBIOS SETUP - PERIPHERAL SETUP
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OnBoard FDC                          Auto      Available Options:
OnBoard Serial Port1                 3F8h      Enabled
OnBoard Serial Port2                 2F8h      Disabled
  Serial Port2 Mode                  Normal
    IR Duplex Mode                   Half
    IrDA Protocol                    1.6 uS
OnBoard Parallel Port                Auto
  EPP Version                        1.9
  Parallel Port Mode                 SPP/EPP
  Parallel Port IRQ                  7
  Parallel Port DMA Channel          N/A
Onboard IDE                          Both
FAN#1 Speed(RPM)                     5000
FAN#2 Speed(RPM)                     5000
CPU#1 Temperature(c)                 35
CPU#2 Temperature(c)                 35

                                     ESC:Exit        :Sel
                                     PgUp/PgDn:Modify
                                     F2/F3:Color
```

2. Use <up> and <down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.

3. After you have finished with the Peripheral Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Onboard FDC

Choose Auto, for the BIOS to automatically detect the device

If the ISA add-on card has	Onboard FDC to be set at
FDC exist	Disabled
none FDC exist	Enabled

Choose Enabled, Enabling onboard FDC.
Choose Disabled, Disabling onboard FDC.
The Optimal and Fail-Safe default settings are Auto.

Onboard Serial Port1/Onboard Serial Port2

Choose 3F8, for the BIOS to automatically detect the device.

If the ISA add-on card has				Onboard Serial port to be set at			
COM1 (I/O:3F8H)	COM2 (I/O:3F8H)	COM3 (I/O:3E8H)	COM4 (I/O:2E8H)	PORT1	IRQ ASSIGNED	PORT2	IRQ ASSIGNED
✓	✓	✓	✓	DISABLED	X	DISABLED	X
✓	✓	X	X	COM3	4	COM4	3
X	X	✓	✓	COM1	4	COM2	3
✓	X	X	✓	COM2	3	COM3	4
X	✓	✓	X	COM1	4	COM4	3
✓	✓	✓	X	COM4	3	DISABLED	X
✓	✓	X	✓	COM3	4	DISABLED	X
✓	X	✓	✓	COM2	3	DISABLED	X
X	✓	✓	✓	COM1	4	DISABLED	X
X	X	X	X	COM1	4	COM2	3
✓	X	X	X	COM2	3	COM3	4
X	✓	X	X	COM1	4	COM3	4
X	X	✓	X	COM1	4	COM2	3
X	X	X	✓	COM1	4	COM2	3

Note: *If the onboard serial port interrupt and ISA add- on card interrupt are in conflict, the serial port will not work properly. Please disable one of the devices.*

Serial Port2 Mode

Choose onboard Serial Port2 operation mode as standard UART or as IR/Infrared. The default setting is Normal.

IR Duplex Mode

Choose full duplex or half duplex operation mode when the onboard Serial Port2 operation mode is selected as IR.

IrDA Protocol

If onboard Serial Port2 is selected as IrDA mode, the user has to set the IR transmit active pulse time according to the specification of IR module. Based on different IR module, the user can select active pulse time as 1.6us or 3/16 bit.

Onboard Parallel Port

Choose Auto, the BIOS automatically assigned onboard parallel port to available parallel port or disabled

If the ISA add-on card has			Onboard parallel port	
LPT1 I/O:378H	LPT2 I/O:278H	LPT3 I/O:3BCH	PORT ASSIGNED	IRQ ASSIGNED
✓	✓	✓	Disabled	X
✓	✓	X	LPT3	5
✓	X	✓	LPT2	5
X	✓	✓	LPT1	7
✓	X	X	LPT2	5
X	✓	X	LPT1	7
X	X	✓	LPT1	7
X	X	X	LPT1	7

Note: *If the onboard parallel port interrupt and ISA add-on card interrupt are in conflict, the parallel port will not work properly. Please disable one of the devices.*

EPP Version

Parallel Port Mode

This option allows user to choose the operating mode of the onbaord parallel port. The settings are Normal, SPP/EPP or ECP mode.

Parallel Port IRQ

If the onboard parallel mode is not on auto mode, the user can select the interrupt line for onboard parallel port. We suggest that the user select the interrupt for the onboard parallel port as shown below:

Onboard parallel port set at	Parallel Port IRQ
LPT1(378H)	7
LPT2(278H)	5
LPT3(3BCH)	5

Parallel Port DMA Channel

This option allows user to choose DMA channel 1 to 3 for the onboard parallel port on ECP mode.

Onboard IDE

Set this option to enable or disable on board IDE controller.

FAN#1 Speed (RPM)/FAN#2 Speed (RPM)

This option monitors the Fan Speed. If the system detect your fan speed more or less than 5000 RPM, it will show a warning sign.

CPU#1 Temperature(c)/CPU#2 Temperature(c)

This option monitors the CPU temperature. If the system detected that your CPU temp. is more or less than 35 degree. It will show a warning sign.