

PRM-0074I

High Performance
Pentium II PCI Mainboard
User's Guide



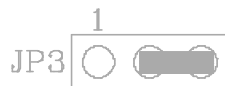
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P/N: 155100-8502



WARNING

For the system to operate normally, please make sure JP3 of the mainboard is set as below. Refer to Fig. 2 in this manual for the location JP3.



If JP3 is shorted to 1-2, no CMOS data can be retained.

CAUTION

The motherboard is an electrostatic sensitive device. Don't open or handle except at a static-free workstation.

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CHAPTER 1

INTRODUCTION

Preface

The motherboard is a 4-layer, full ATX form factor high-performance mainboard. It is developed around the Pentium II processor with 64 bit access to data transfer and MMX technology. It includes Intel i82440FX system chipset, NS PC87308 Super I/O controller.

Features

Processor

- ?? Intel Pentium II series.
- ?? The mainboard can run with following speeds:
233, 266 and 300 MHz

Chipset

- ??Intel 82441FX (PCI and Memory Controller)
- ??Intel 82442FX (Data Bus Xcelerator)
- ??Intel 82371SB (PCI ISA IDE Xcelerator)
- ??NS PC87308 (Super I/O Controller)

Main Memory

- ?? Memory configurations from up to 512MB are possible using combination of 1M*36 to 16MB*36 SIMM module. (32Bits non-parity 72-pin SIMM Module also available).
- ?? Support both Fast Page Mode and Extended Data Output (EDO) Mode DRAM Modules.
- ?? Hidden DRAM Refresh for higher system performance.
- ?? ECC (Error Checking and Correction) support (Need SIMM module with parity).

Multi I/O

- ?? On board Multi-I/O supports two serial, one parallel ports and floppy drive controller.
- ?? Serial ports are 16550 Fast UART compatible.
- ?? Parallel port has EPP and ECP capabilities.
- ?? IrDA supported.
- ?? USB supported.

PCI IDE

- ?? On board supports PCI Master IDE Controller, two connectors support up to four IDE devices such as HDD, CD ROM drive and Tape Back-up drives, etc.
- ?? PCI Master IDE controller supports PIO Mode 3 and 4 devices, I/O data transfer rate can be up to 17Mb/s. DMA mode transfer rate can be up to 22Mb/s.

System BIOS

- ?? AMI BIOS (128KB Flash EPROM).

Slots

- ?? Five PCI slots (1 shared)
- ?? Three ISA slots (1 shared)

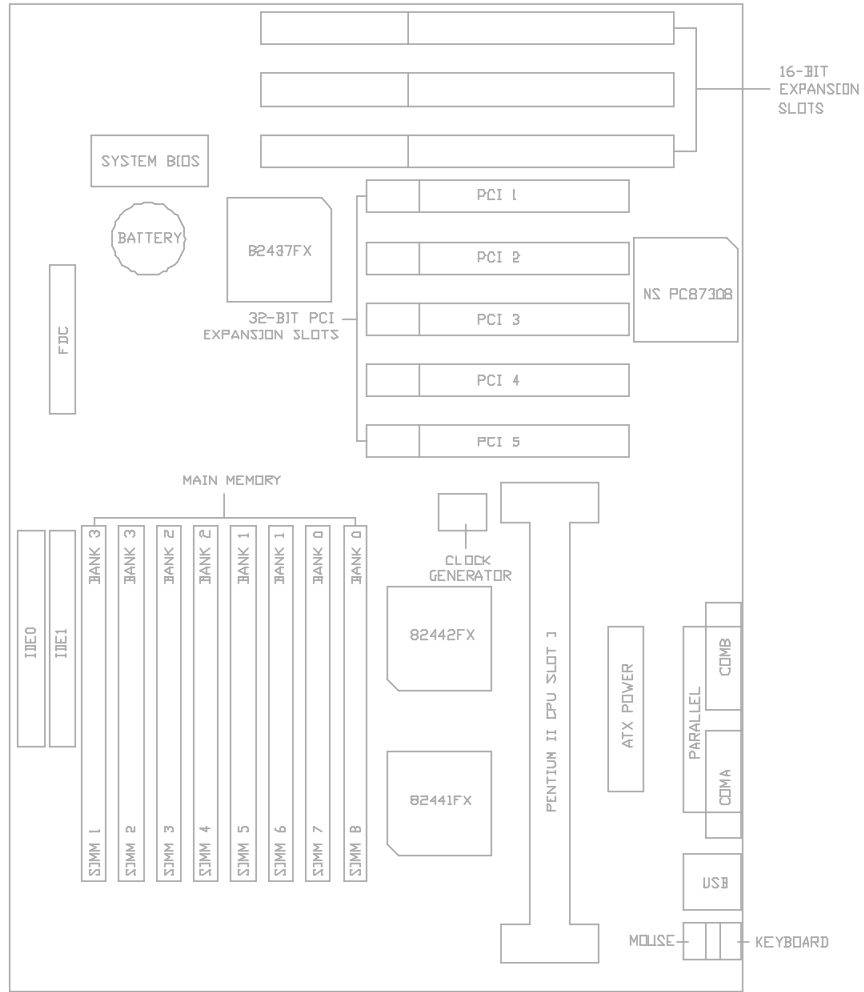


Fig. 1 Key Components of the Mainboard

Form Factor

?? Full ATX Size (305 x 244mm) 4 Layer

Environment

Working Specifications

Actual Field MTBF (hours) 104,515 hours
Preventive Maintenance Not Required

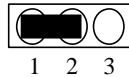
Environmental Limits

	Operating	Non-operating
Temperature	0 to 50 degree Celsius	-10 to 65 Degree Celsius
Relative Humidity (without condensation)	8 to 85%	5 to 95%
Altitude	10,000ft	40,000ft
Vibration	1,000Hz	
Electricity	4.75 ? 5.25V	

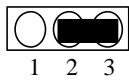
CHAPTER 2

JUMPER SETTINGS

2.1 JUMPERS PRESENTATION



Pins 1 and 2 are shorted with a jumper cap.



Pins 2 and 3 are shorted with a jumper cap.



The jumper is closed (on) when the jumper cap is placed over the two pins of the jumper.



The jumper is open (off) when the jumper cap is removed from jumper.

2.2 JUMPER CONVENTION

Different colour of jumper caps (mini-jumpers) are used on the board to represent different usage of the jumpers:

Red : CPU Clock setting

Black: Other

2.3 GRAPHICAL DESCRIPTION OF JUMPER SETTINGS

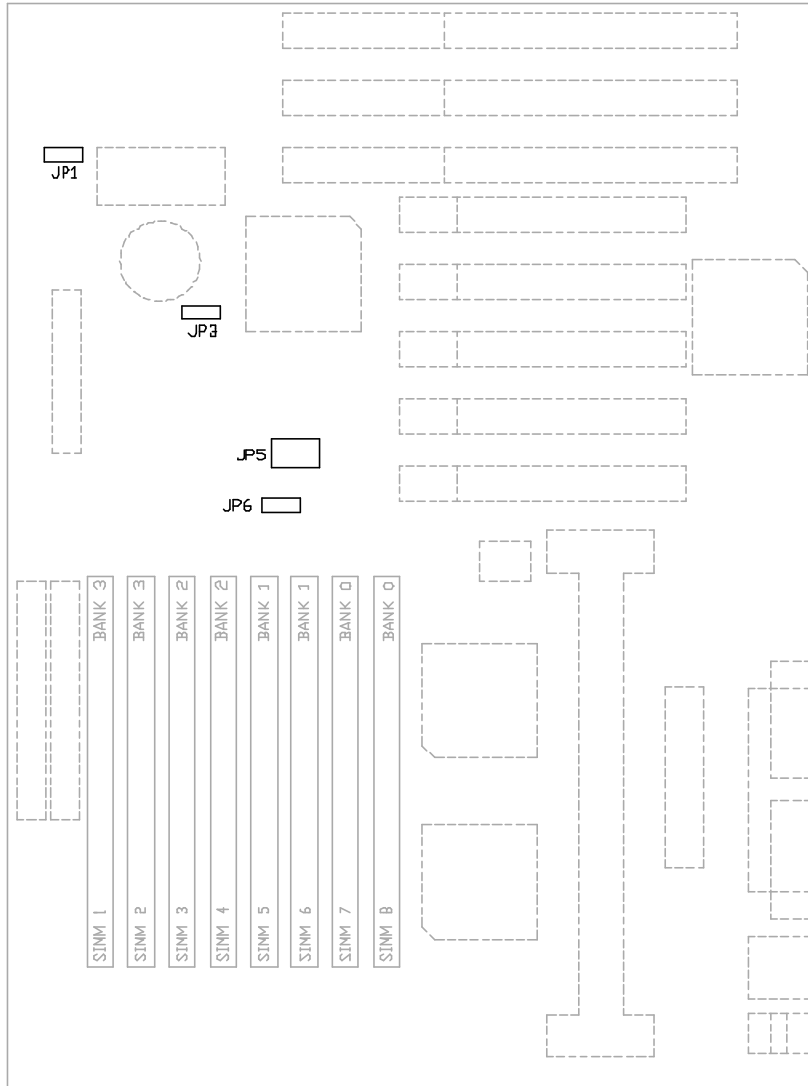


Fig. 2 Jumper Location

2.4 CPU SPEED

1. 233MHz

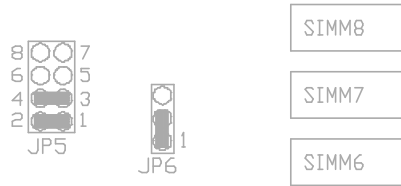


Fig. 3a CPU Speed

2. 266MHz

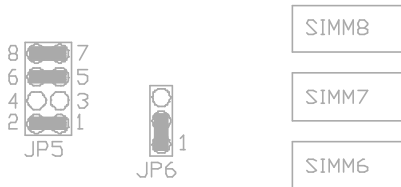


Fig. 3b CPU Speed

3. 300MHz

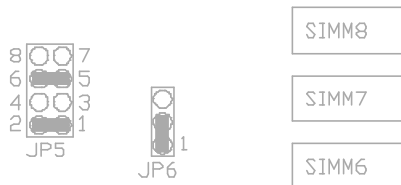


Fig. 3c CPU Speed

2.5 JP3 - CLEAR CMOS RTC DATA

JP3 is used to clear the content of the CMOS data in the RTC chip. Refer to the Fig. 12 for the location.



JP3	Description
 1	Normal (default)
 1	Clear CMOS

Table 1: JP3 - Clear CMOS RTC Data

2.6 JP1 - VOLTAGE SELECTION FOR SYSTEM ROM

1. 5V Flash EPROM on System ROM



Fig. 4a

2. 12V Flash EPROM on System ROM



Fig. 4b

2.7 RETENTION MECHANISM KITS INSTALLATION GUIDE

Retention Mechanism Kits includes following components:

1. Retention mechanism Assembly

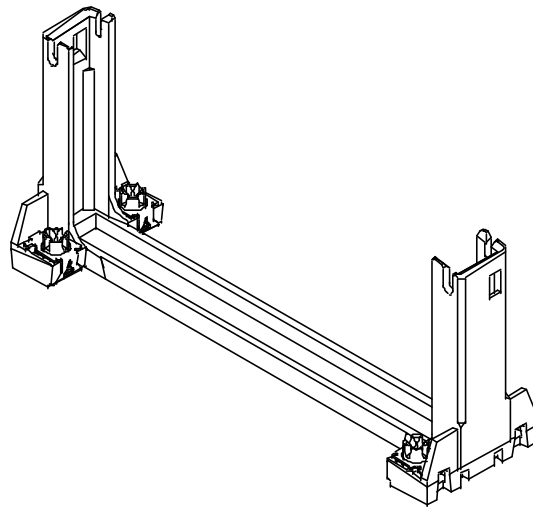


Fig. 5

2. Retention Mechanism Attach Mount

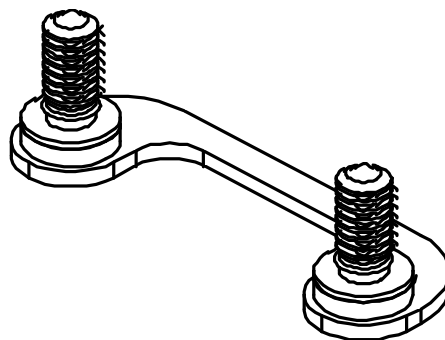


Fig. 6

3. Heatsink Top Support

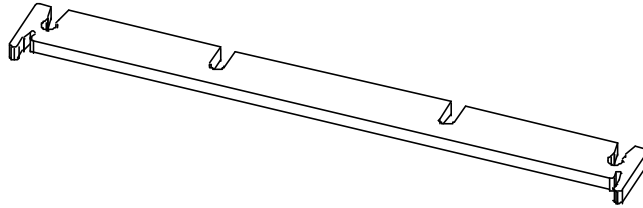


Fig. 7

4. Heatsink Support Base

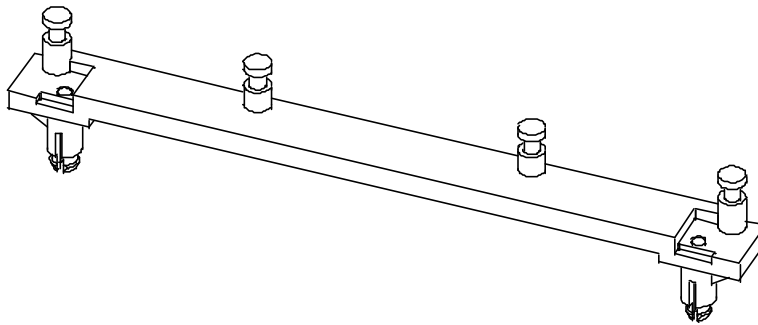


Fig. 8

Before the installation of RM Kits find the six holes on the motherboard for RM installation. The hole position and usage is as following:

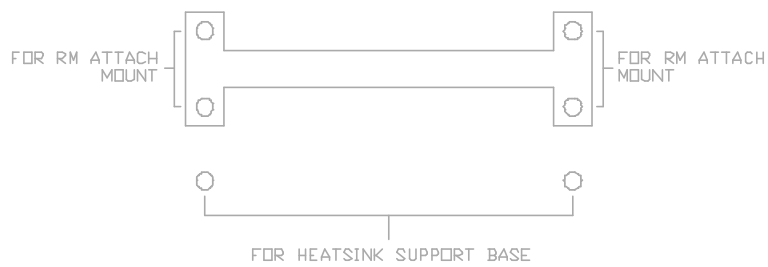


Fig. 9

Chapter 2

Installation Guide

1. Mount the two RM Attach Mounts onto the motherboard from bottom side. These mounts will be used to attach the RM Assembly.
2. Put the RM Assembly on the Slot 1 and use the four screws to fix RM Assembly to the RM Attach Mount.
3. Install the Heatsink Support Base onto the motherboard, insert the two plastic nail to the hole in the Heatsink Support Base as following diagram:

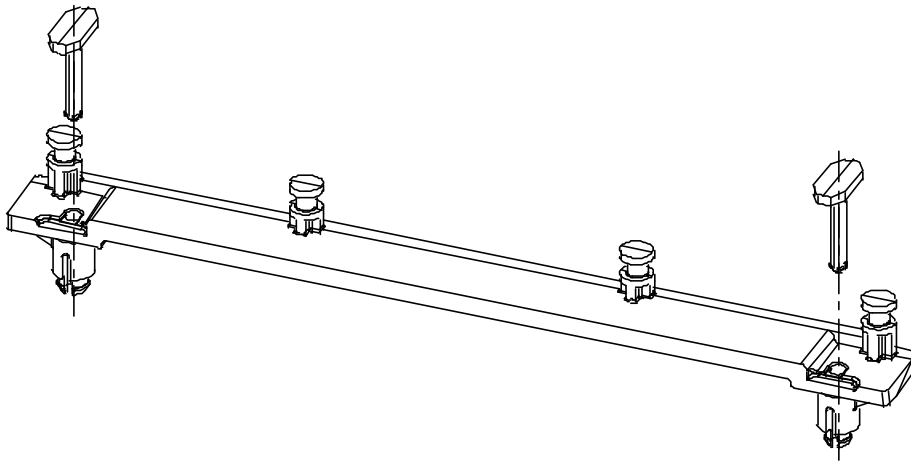


Fig. 10

4. Insert the Heatsink Top Support to the Pentium II Heatsink and the Heatsink Support Base as the following diagram:

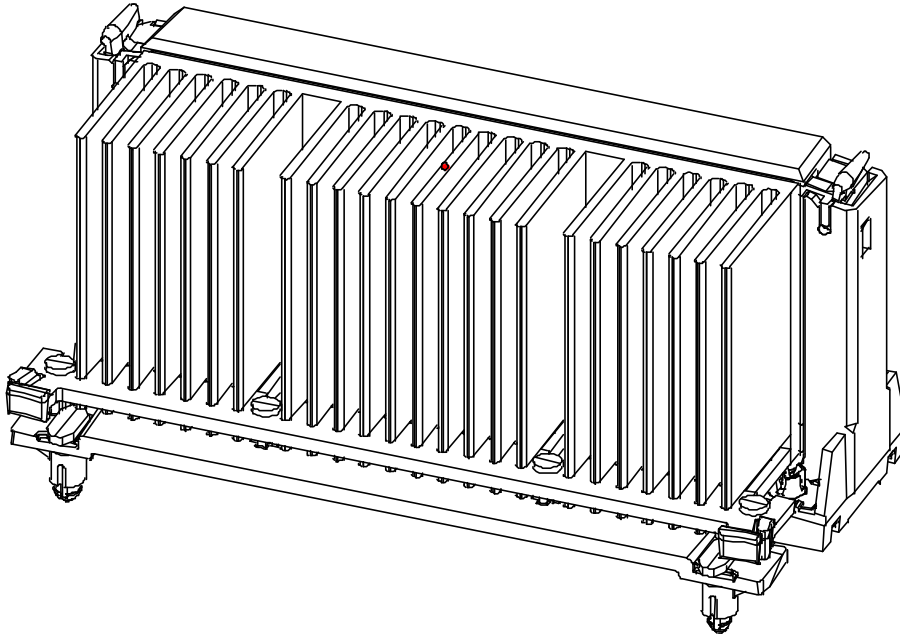


Fig. 11

2.8 MEMORY CONFIGURATION

The Mainboard lets user upgrade system memory via SIMM sockets on the mainboard. On-board memory is located in three banks: Bank 0, Bank 1, Bank 2 and Bank 3.

Two SIMM sockets are provided in each bank. User can install either 4M, 8M, 16M, 32M or 64M SIMM in each bank. Maximum memory size of system can be 512MB.

Note: *The type of SIMM1/SIMM2 must be same.*
 The type of SIMM3/SIMM4 must be same.
 The type of SIMM5/SIMM6 must be same.
 The type of SIMM7/SIMM8 must be same.

Chapter 2

Install memory in any or all of the banks in any combination as following:

Bank 0 (SIMM7, 8)	4M, 8M, 16M, 32M or 64M
Bank 1 (SIMM5, 6)	4M, 8M, 16M, 32M or 64M
Bank 2 (SIMM3, 4)	4M, 8M, 16M, 32M or 64M
Bank 3 (SIMM1, 2)	4M, 8M, 16M, 32M or 64M

Table 2: Memory Configuration

CHAPTER 3

CONNECTOR CONFIGURATION

Once the mainboard have been fastened into the system case, the next step is to connect the internal cables and external cables. The mainboard connectors have varying numbers of pins and are the points of contact between the mainboard and other parts of the computer.

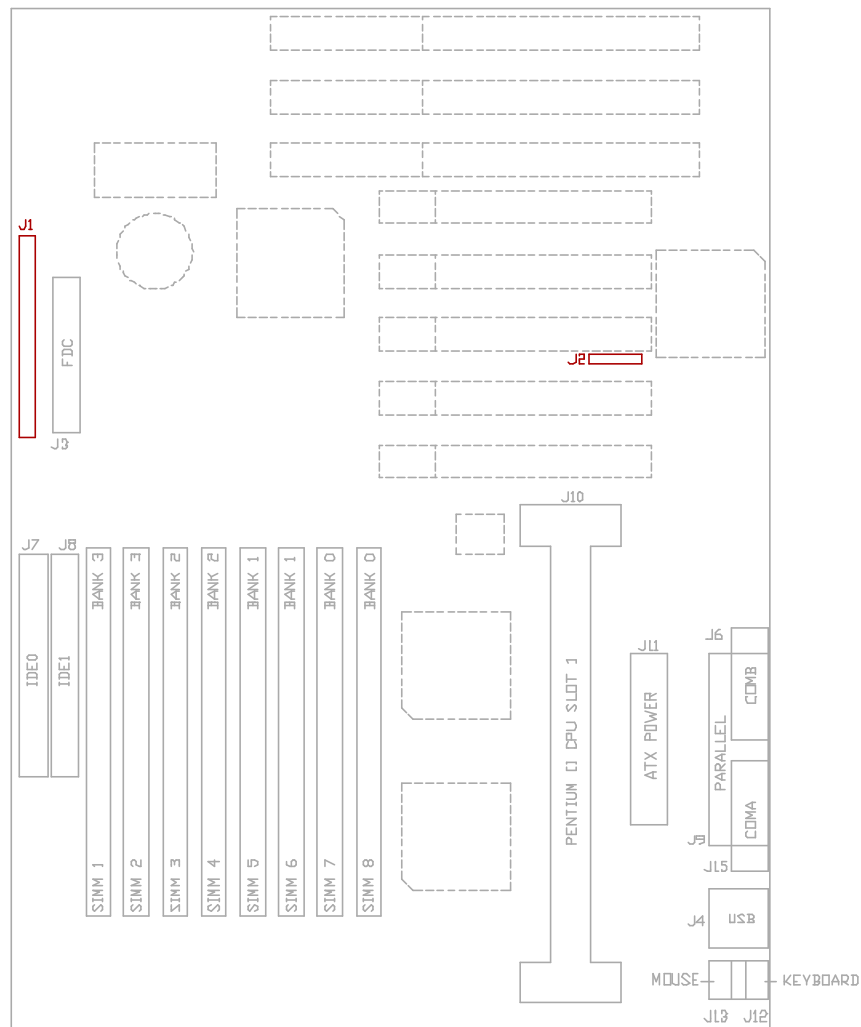


Fig. 12 Connector Location

3.1 J1 - MULTIPLE FUNCTION JUMPER

J1 is a front panel multi-function jumper include speaker, reset, keylock, Hard Disk LED, Hardware Suspend Switch, ATX power switches and Turbo LED.

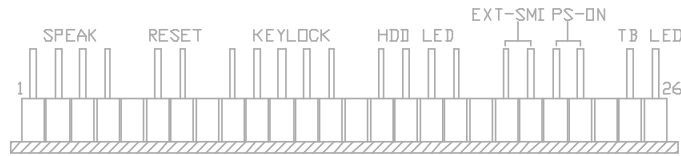


Fig. 13 J1 - Multiple Function Jumper

The pin definition is as following table:

Pin	Description	Pin	Description
1	VCC	14	Not Used
2	GND	15	+Anode
3	N/A	16	-Cathode
4	Data Out	17	-Cathode
5	Not Used	18	+Anode
6	GND	19	Note Used
7	Reset	20	GND
8	Not Used	21	Ext-SMI
9	LED Power	22	GND
10	N/A	23	PS-ON
11	GND	24	Not Used
12	Keyboard Inhibitor	25	VCC
13	GND	26	GND

Table 3

3.2 J2 - IrDA CONNECTOR

J2 is a IrDA connector that use UART2 as interface of IrDA Infrared and SIR. HP



Fig. 14 J2 - IrDA Connector

3.3 J10 - SLOT 1 FOR PENTIUM CPU

J10 is the slot for Pentium II CPU.



Fig. 15 J10 - Slot 1 for Pentium II CPU

Motherboard has different accessories offered for different Pentium II CPU package.

Option A	No Retention Mechanism and Heatsink	For Box packed Pentium II CPU
Option B	With Retention Mechanism No Heatsink	For Pentium II with Heatsink
Option C	With Retention mechanism and Heatsink	For Pentium II without RM and Heatsink

Table 4

3.4 J11 - ATX POWER SUPPLY CONNECTOR

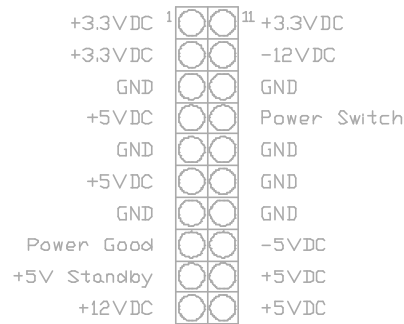


Fig. 16 J11 - ATX Power Supply Connector

3.5 J3 - FLOPPY DRIVE CONNECTOR

This connector supports the floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drive.

3.6 J7, J8 - PRIMARY/SECONDARY IDE CONNECTORS

These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to your hard disk.

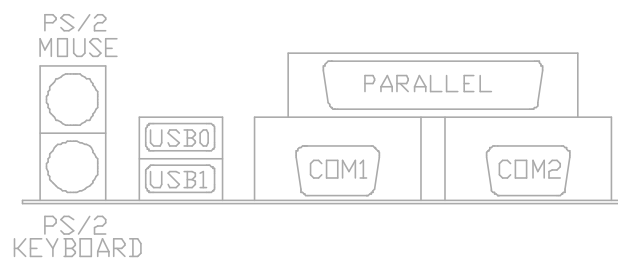


Fig. 17 I/O Connectors

3.7 PS/2 KEYBOARD CONNECTOR

This connector is a six-pin female mini DIN connector using a PS/2 plug. If a standard AT size keyboard plugs, you may use the DIN to mini DIN adaptor.

3.8 PS/2 MOUSE CONNECTOR

This connector is a six-pin female mini DIN connector using a PS/2 plug. Plug the jack on the PS/2 keyboard cable into this connector.

3.9 UNIVERSAL SERIAL BUS PORT 0 & 1

These connectors are two four pin female sockets which are available for connecting USB device.

3.10 PARALLEL PORT CONNECTOR

This is a D-Type 25 pin female connector.

3.11 SERIAL PORT COM1 & COM2

This is a D-Type 9 pin male connector for pointing devices or other serial devices.

CHAPTER 4

AMI WinBIOS SETUP

WinBIOS Setup has an easy-to-use graphical user interface that makes system configuration easy and simple. The configuration options in WinBIOS Setup are all icon-based. All settings for each option are displayed for easy access. All WinBIOS Setup functions can be accessed by mouse, keyboard, or pen. Pen access must be customized for each hardware platform.

4.1 MOUSE SUPPORT

The following types of mouse devices are supported:

- ?? PS/2-type mouses,
- ?? bus mouses that use IRQs 3, 4 or 5 (IRQ2 is not supported),
- ?? Microsoft-compatible mouses (the M, V, W Series using the M and M+ protocols),
and
- ?? Logitech C-series-compatible mouses using the MM protocol.

4.2 POINT & CLICK INTERFACE

WinBIOS Setup uses the familiar point and click navigation technique. The end user can point with the mouse anywhere on the screen, click the left mouse button, and WinBIOS Setup control is transferred to the new location. The previous window is closed.

WinBIOS Setup can be accessed via keyboard, mouse, or pen. The mouse click functions are:

- ?? single click to change or select both global and current fields,
- ?? double clicks to perform an operation in the selected field, and
- ?? single click on the top left corner of any window would exit from it. When exit from the Main Setup windows, WinBIOS will prompt the user to save all changes.

All parameters that have been changed will automatically be saved, pending the selection on the exit screen.

4.3 USING KEYBOARD WITH WinBIOS SETUP

WinBIOS Setup has a built-in keyboard driver that uses simple keystroke combinations:

Keystroke	Function
<Tab>	Move to the next window or field.
? , ? , ? , ?	Move to the next field to the right, left, above, or below.
<Enter>	Select in the current field.
<Esc>	Closes the current operation and return to previous level.
<PgUp>	Returns to the previous page.
<PgDn>	Advances to the next page.
<Home>	Returns to the beginning of the text.
<End>	Advances to the end of the text.
<Alt><H>	Access a help window.
<Alt> <Spacebar>	Exit WinBIOS Setup.
Alphabetic keys	A to Z are used in the Virtual Keyboard, and are not case-sensitive.
Numeric keys	0 to 9 are used in the Virtual Keyboard and Numeric Keypad.

Table 5

4.4 STARTING WinBIOS SETUP

As POST executes, press to run WinBIOS Setup. After that the hourglass icon tells the user to wait until a process completes.

4.5 WinBIOS SETUP MAIN MENU

The WinBIOS Setup main menu, shown below, is organized into four windows. Each window corresponds to a section.

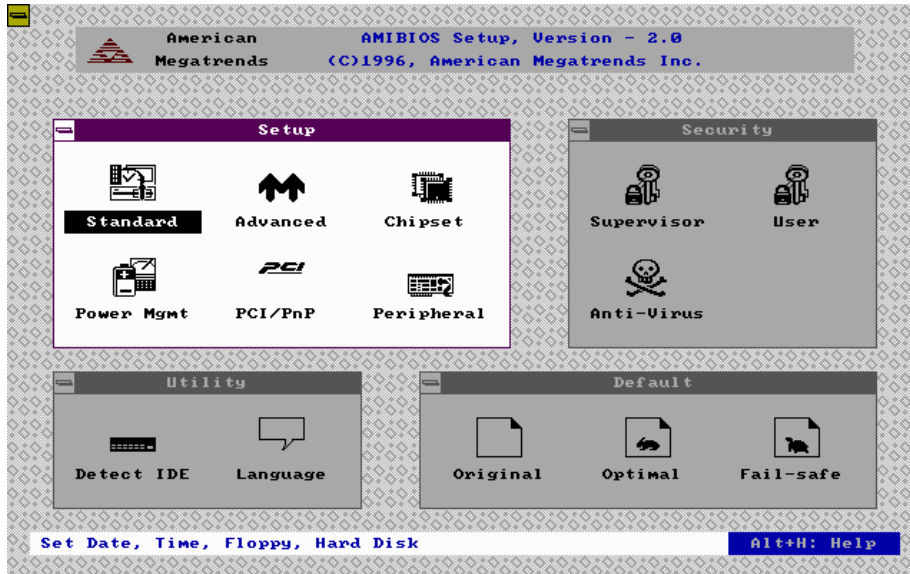


Fig. 18 Main Menu

Each section contains several icons. Clicking on each icon activates a specific function. The sections are:

- Setup** contains six icons that permit user to set system configuration options such as date, time, hard disk type, floppy type, and many others.
- Security** contains three icons that control WinBIOS security features.
- Utility** contains two icons that perform system functions.
- Default** contains three icons that permit user to select a group of settings for all WinBIOS Setup options.

Each WinBIOS Setup option has two default settings. The type of default are:

Optimal these settings provide the best performance characteristics.

Fail-Safe these settings are more likely to configure a workable computer when something is wrong. If user cannot boot the computer successfully, select the Fail-Safe WinBIOS setup options and try to diagnose the problem after the computer boots. These settings do not provide optimal performance.

4.6 SETUP

WinBIOS Setup can have up to six separate screens. Different types of system configuration parameters are set on each screen.

Type	Description
Standard Setup	Set the time and data. Configure disk drive.
Advanced Setup	Configure basic system performance parameters.
Chipset Setup	Configure features specific to the chipset used in the computer.
Power Management Setup	Configure power conservation features.
PCI/PnP Setup	Configure PCI and Plug-and-Play features.
Peripheral Setup	Configure I/O support.

Table 6: Setup Description

4.6.1 STANDARD SETUP

The Standard Setup Screen follows.

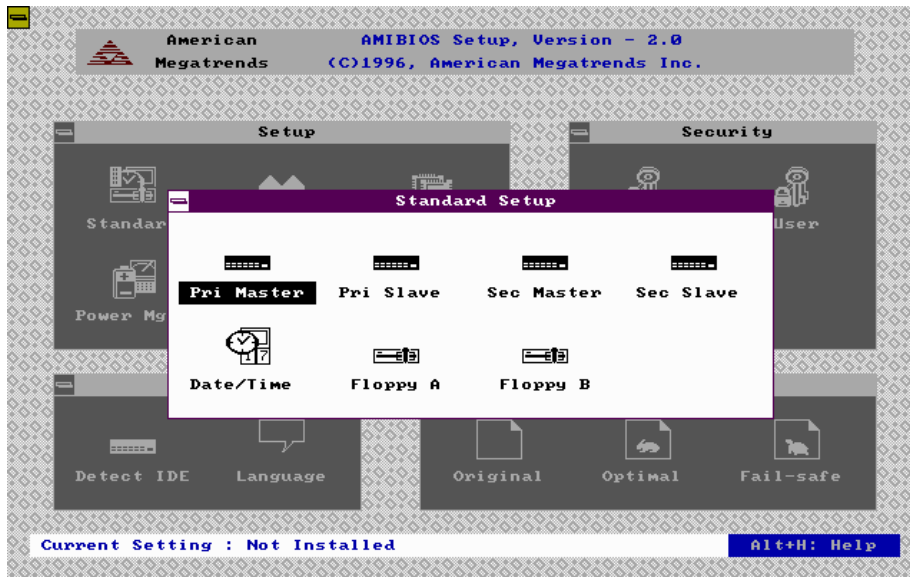


Fig. 19 Standard Setup Menu

The following are the description for the options located in the Standard Setup window.

Configuring IDE Drives: If the hard disk drive to be configured is an IDE drive, select the appropriate drive icon (Pri Master, Pri Slaves, Sec Master, Sec Slave). Choose the **Type** parameter and select Auto.

AMIBIOS automatically detects the IDE drive parameters and displays them. Click on the OK button to accept these parameters.

Click on **LBA\Large Mode** and choose *On* to enable support for IDE drives with capacities greater than 528MB.

Click on **Block Mode** and choose *On* to support IDE drives that use Block Mode.

Click on **32Bit Mode** and click on *On* to support IDE drives that permit 32-bit accesses.

Chapter 4

Click on **PIO Mode** to select the IDE Programmed I/O mode. The settings are *Auto*, 0, 1, 2, 3, 4, or 5. Click on *Auto* to allow AMIBIOS to automatically choose the PIO mode that the IDE drive being configured uses. If you select 0-5 you must make absolutely certain that you are selecting the PIO mode supported by the IDE drive being configured.

Date/Time Configuration: Select the Standard option. Select the Date and Time icon. The current values for each category are displayed. Enter new values through the keyboard.

Floppy Drive A:/Floppy Drive B:: Move the cursor to these fields via *?* and *?* and select the floppy type. The settings are *360KB 5¼"*, *1.2MB 5¼"*, *720KB 3½"*, *1.44MB 3½"*, *2.88MB 3½"* or *Not Installed*.

4.6.2 ADVANCED SETUP

The Advanced Setup options described in this section are the standard options as shown on the following screen.

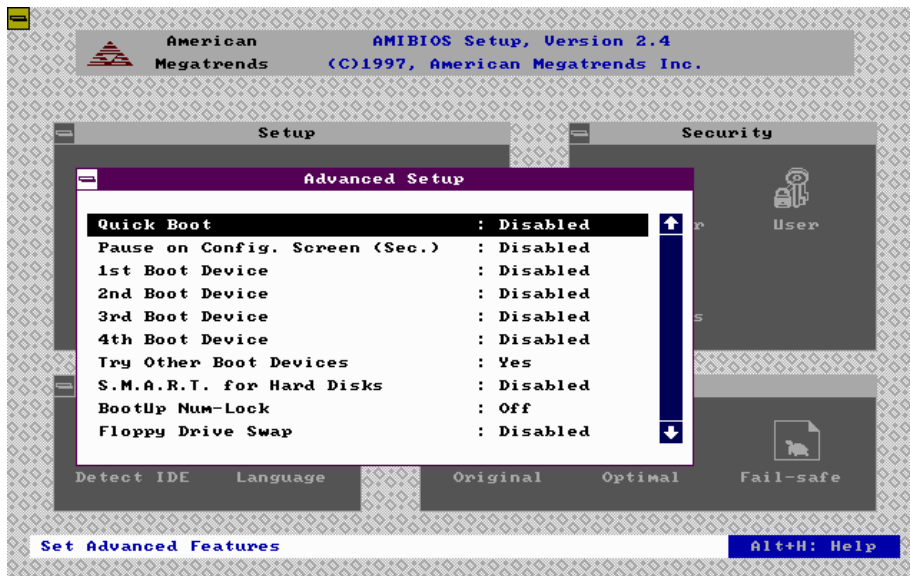


Fig. 20 Advanced Setup Menu

Quick Boot: Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. The settings are:

Setting	Description
Disabled	AMIBIOS test all system memory. AMIBIOS waits up to 40 seconds for a READY signal from the IDE hare disk drive. AMIBIOS waits for 5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. AMIBIOS checks for a key press and runs WINBIOS Setup if the key has been pressed.
Enabled	AMIBIOS does not test system memory above 1 MB. AMIBIOS does not wait up to 40 seconds for a READY signal from the IDE hard disk drive. If a READY signal is not received immediately from the IDE drive, AMIBIOS does not configure that drive. AMIBIOS does not wait for 5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. You cannot run WINBIOS Setup at system boot, because there is no delay for the <i>Hit to run Setup</i> message.

Table 7

The Optimal and Fail-Safe default settings are *Enabled*.

Pause on Config. Screen (Sec.): This option sets the time paused at configuration screen. The setting are *Disabled, 2, 3,15 seconds*. The default setting is *Disabled*.

1st Boot Device: This option specifies the first boot up devices. The settings are *Disabled, IDE-0, IDE-1, IDE-2, IDE-3, FLOPPY, FLOPTICAL* and *CDROM*. The default setting is *IDE-0*.

2nd Boot Device: This option specifies the second boot up device. The settings are *Disabled, IDE-0, FLOPPY, FLOPTICAL* and *CDROM*. The default setting is *FLOPPY*.

3rd Boot Device: This option specifies the third boot up device. The settings are *Disabled, IDE-0, FLOPPY, FLOPTICAL* and *CDROM*. The default setting is *CDROM*.

4th Boot Device: This option specifies the fourth boot up device. The settings are *Disabled, FLOPPY, FLOPTICAL* and *CDROM*. The default setting is *Disabled*.

Try Other Boot Devices: This option enable the system boot from other bootable devices. The settings are *Yes* or *No*. The default setting is *Yes*.

Chapter 4

S.M.A.R.T. for Hard Disks: This is the Self-Monitoring Analysis and Reporting Technology. This feature helps BIOS warn the user of the possible device failure thereby giving user a chance to back up the device and replace the device before actual failure happens.

BootUp NumLock: Set this option to *Off* to turn the Num Lock key off when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are *On* or *Off*. The default settings are *On*.

Floppy Drive Swap: Set this option to *Enabled* to permit drives A: and B: to be swapped. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Floppy Disk Seek: Set this option to *Enabled* to specify that floppy drive A: will perform a seek operation at system boot. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Floppy Access Control: This option sets the access method of Floppy Disk. If *Normal* is chosen, a user can both read or write the floppy disk. If *Read Only* is chosen, a user can read the floppy disk only.

HDD Access Control: This option sets the access method of HDD. If *Normal* is chosen, a user can both read or write the HDD. If *Read Only* is chosen, a user can read the HDD only.

PS/2 Mouse Support: When this option is set to *Enabled*, AMIBIOS supports a PS/2-type mouse. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Primary Display: This option specifies the type of display monitor and adapter in the computer. The settings are *Mono*, *CGA40x25*, *CGA80x25*, *EGA/VGA*, or *Absent*. The Optimal and Fail-Safe default are *EGA/VGA*.

Password Check: This option enables password checking every time the computer is powered or every time WINBIOS Setup is executed. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears if WINBIOS is executed.

Parity Check: Set this option to *Enabled* to check the parity of all system memory. The setting are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Boot To OS/2: Set this option to *Yes* to permit AMIBIOS to run with IBM OS/2. The settings are *Yes* or *No*. The default settings are *No*.

Internal Cache: This option specifies the caching algorithm used for L1 internal cache memory. The settings are:

Setting	Description
<i>Disabled</i>	Neither L1 internal cache memory on the CPU or L2 secondary cache memory is enabled.
<i>WriteBack (default)</i>	Use the write-back caching algorithm.
<i>WriteThru</i>	Use the write-through caching algorithm.

Table 8

External Cache: This option specifies the caching algorithm used for L2 secondary (external) cache memory. The settings are:

Setting	Description
<i>Disabled</i>	Neither L1 internal cache memory on the CPU or L2 secondary cache memory is enabled.
<i>Enabled</i>	Use the write-back caching algorithm.

Table 9

Optimal default setting is *Enabled*. The Fail-Safe default setting is *Disabled*.

System BIOS Shadow Cacheable: When this option is set to *Enabled*, the contents of the F0000h system memory segment can be read from or written to L2 secondary cache memory. The contents of the F0000h memory segment are always copied from the BIOS ROM to system RAM for faster execution.

The settings are *Enabled* or *Disabled*. The Optimal default setting is *Enabled*. The Fail-Safe default setting is *Disabled*.

Chapter 4

C000,16K Shadow/C400,16K Shadow/C800,16K Shadow/CC00,16K Shadow/D000,16K Shadow/D400,16K Shadow/D800,16K Shadow: These options control the location of the contents of the 16KB of ROM beginning at the specified memory location. If no adaptor ROM is using the named ROM area, this area is made available to the local bus. The settings are:

Setting	Description
<i>Enabled</i>	The contents of C0000h - C3FFFh are written to the same address in system memory (RAM) for faster execution.
<i>Cache</i>	The contents of the named ROM area are written to the same address in system memory (RAM) for faster execution, if an adaptor ROM will be using the named ROM area. Also, the contents of the RAM area can be read from and written to cache memory.
<i>Disabled</i>	The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

Table 10

The default setting is *Disabled*.

4.6.3 CHIPSET SETUP

The Chipset Setup options described in this section are the standard options as shown on the following screen.

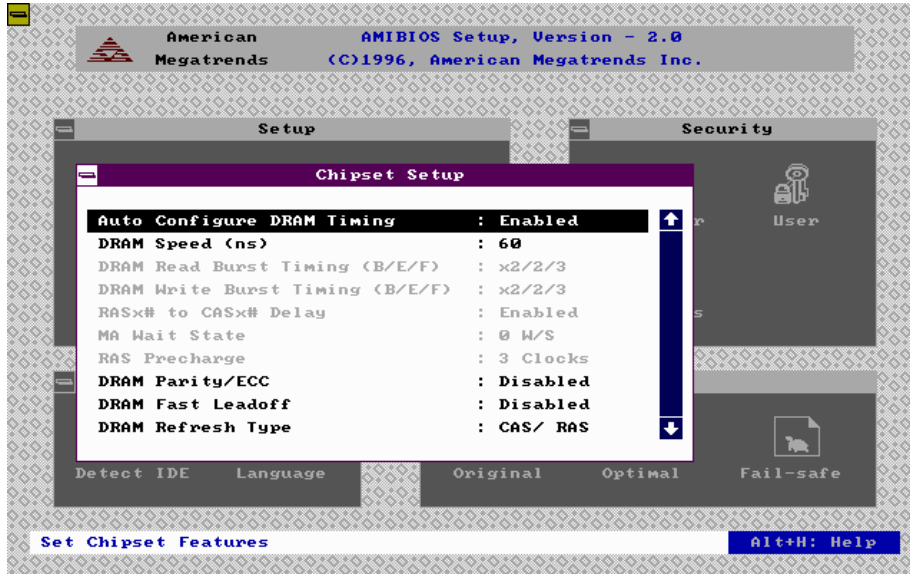


Fig. 21 Chipset Setup Menu

Auto Configure DRAM Timing: Specify the method of configuring DRAM timing.

Enabled	Set the DRAM Timing Parameter according to the DRAM speed.
Disabled	Set the DRAM Timing Parameter manually.

Table 11

The Optimal default setting is *Enabled*. The Fail-Safe default setting is *Disabled*.

DRAM Speed (ns): Specify the RAS access speed of the SIMMs installed in the motherboard as system memory. The settings are *50ns*, *60ns* or *70ns*. The default is *70ns*.

Chapter 4

DRAM Read Burst Timing (B/E/F): The DRAM read burst timing depend on the type of DRAM on a per-row basis. Slower rates may be required to support slower memories. The setting are $x1/2/3$, $x2/2/3$, $x2/3/4$ and $x3/4/4$. The Optimal default setting is $x2/3/4$. The Fail-Safe default setting is $x3/4/4$.

DRAM Write Burst Timing (B/E/F): The DRAM write burst timing depend on the type of RAM on a per-row basis. Slower rates may be required to support slower memories. The setting are $x2/2/3$, $x3/3/3$, $x3/3/4$ and $x4/4/4$. The Optimal default setting is $x3/3/3$. The Fail-Safe default setting is $x4/4/4$.

RAS# To CAS# Delay: When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows a delay time between the assertion of RAS# and CAS#. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default setting is *Enabled*.

MA Wait State: When this option is *Iws*, one additional wait state is inserted before the assertion of the first MA and CAS#/RAS# during DRAM read or write leadoff cycles. The affects pages hit, row miss and page miss cases. The settings are *0ws* or *Iws*. The Optimal and Fail-Safe default settings are *Iws*.

DRAM Parity/ECC: Select *ECC* when ECC (Error Correcting Code) SIMMs are installed on your system board. Select *Parity* when SIMMs with parity are installed on your system board. The setting are *Disabled*, *Parity* or *ECC*.

DRAM Refresh Type: This option specify the DRAM refresh type. The settings are *CAS/RAS* or *RAS only*. The Optimal and Fail-Safe default setting is *RAS only*.

DRAM Refresh Queue: When disabled, the Internal DRAM refresh queue is disabled and all refreshes are priority requests. The settings are *Enabled* and *Disabled*. The Optimal and Fail-Safe settings are *Enabled*.

Fixed Memory Hole: Use this option to specify an area in memory that cannot be addressed on the ISA bus. The settings are *Disabled*, *512-640KB*, or *15-16MB*. The default setting is *Disabled*.

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

CPU To PCI Posting: When this field is *Enabled*, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

PCI To DRAM Pipeline: DRAM optimization feature: If *Enabled*, full PCI-to-DRAM write pipelining is enabled. Buffers in the chipset store data written from the PCI bus to memory. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

The settings are *Enabled* and *Disabled*.

PCI Burst Write Combine: When this option is Enabled, the chipset assembles long PCI bursts from the data held in these buffers.

The settings are *Enabled* and *Disabled*.

8-Bit I/O Recovery Time: This option specifies the length of the delay (in SYSCLKs) inserted between consecutive 8-bit I/O operations. The settings are *1, 2, 3, 4, 5, 6, 7, 8* or *Disabled*. The Optimal and Fail-Safe default settings are *1*.

16-Bit I/O Recovery Time: This option specifies the length of the delay (in SYSCLKs) inserted between consecutive 8-bit I/O operations. The settings are *1, 2, 3, 4*, or *Disabled*. The Optimal and Fail-Safe default settings are *1*.

USB Function: Set this option to *Enabled* to enable the USB function. The settings are *Enabled* or *Disabled*. The default setting is *Disabled*.

USB Keyboard/Mouse Support: Set this option to *Enabled* to enable the USB Keyboard/Mouse. The settings are *Enabled* or *Disabled*. The default setting is *Disabled*.

4.6.4 POWER MANAGEMENT SETUP

The Power Management Setup options described in this section are the standard options as shown on the following screen.

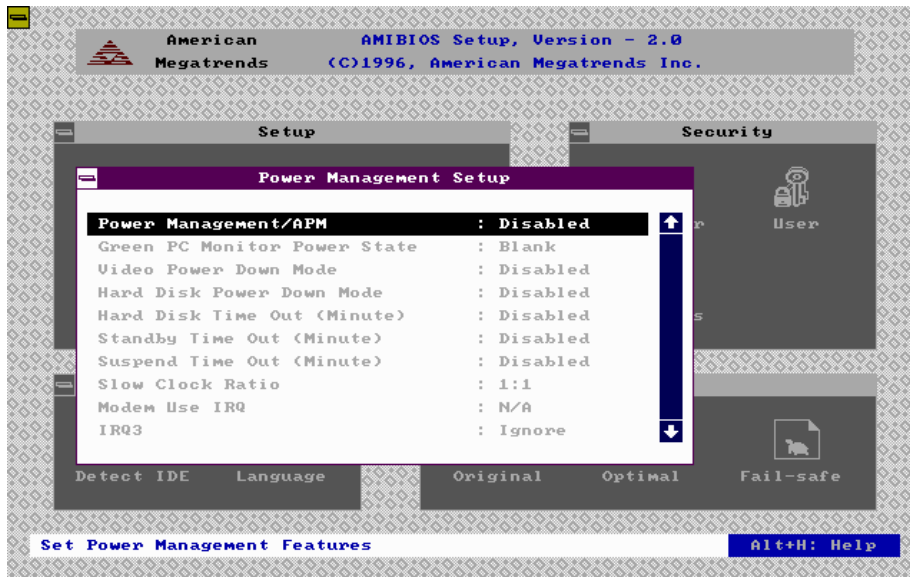


Fig. 22 Power Management Setup Menu

Power Management/APM: Set this option to *Enabled* to enable the power management and APM (Advanced Power Management) features.

The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Green PC Monitor Power State: This option specifies the power management state that the Green PC-compliant video monitor enters after the specified period of display inactivity has expired. The settings are *Off*, *Standby* or *Suspend*. The default settings are *Standby*.

Video Power Down Mode: This option specifies the power management state that the video subsystem enters after specified period of display inactivity has expired. The settings are *Disabled*, *Standby* or *Suspend*. The default settings are *Standby*.

Hard Disk Power Down Mode: This option specifies the power management state that the hard disk drive enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby* or *Suspend*. The default settings are *Disabled*.

Hard Disk Timeout (Minute): This option specifies the length of a periods of hard disk inactivity. When this period expires, the hard disk drive enters the power-conserving mode specified in the **Hard Disk Power Down Mode** option described on the previous page. The settings are *Disabled*, *1 Min(Minutes)*, and all one minute intervals up to and including 15 Min. The default settings are *Disabled*.

Standby Timeout (Minute): This option specifies the length of the period of system inactivity when the computer is in Full-On mode before the computer is placed in Standby mode. In Standby mode, some power use is curtailed. The settings are *Disabled*, *1 Min*, *2 Min* and all one minute intervals up to and including 15 *Min*. The default settings are *Disabled*.

Suspend Timeout (Minute): This option specifies the length of the period of system inactivity when the computer is already in Standby mode before the computer is placed in Suspend mode. In Suspend mode, nearly all power use is curtailed. The settings are *Disabled*, *1 Min*, *2 Min*, and all one minute intervals up to and including 15 *Min*. The default settings are *Disabled*.

Slow Clock Ratio: This option specifies the speed at which the system clock runs in power saving modes. The settings are expressed as a ratio between the normal clock speed and the power down clock speed. The settings are *1:1*, *1:2* (half as fast as normal), *1:4* (the normal clock speed), *1:8*, *1:16*, *1:32*, *1:64*, or *1:128*. The default setting is *1:8*.

Modem USE IRQ: This option specifies the Interrupt Request (IRQ) line for modem use. The available options are *NA*, *3*, *4*, *5*, *7*, *9*, *10*, *11*. *NA* means not available. The default option is *NA*.

IRQ3/IRQ4/IRQ5/IRQ7/IRQ9/IRQ10/IRQ11/IRQ12/IRQ13/IRQ14/IRQ15: These options enable event monitoring. When the computer is in a power saving mode, activity on the named interrupt request line is monitored by AMIBIOS. When any activity occurs, the computer enters Full On mode.

Each of these options can be set to *Ignore*, *Monitor*, *Wakeup* or *Both*. The default setting for all options is *Ignore* except IRQ12 is *Both* and IRQ 14/15 are *Monitor*.

4.6.5 PCI/PnP SETUP

PCI/PnP Setup options are displayed by choosing the PCI/PnP Setup Icon from the Setup Menu. The standard option is shown on the following screen.

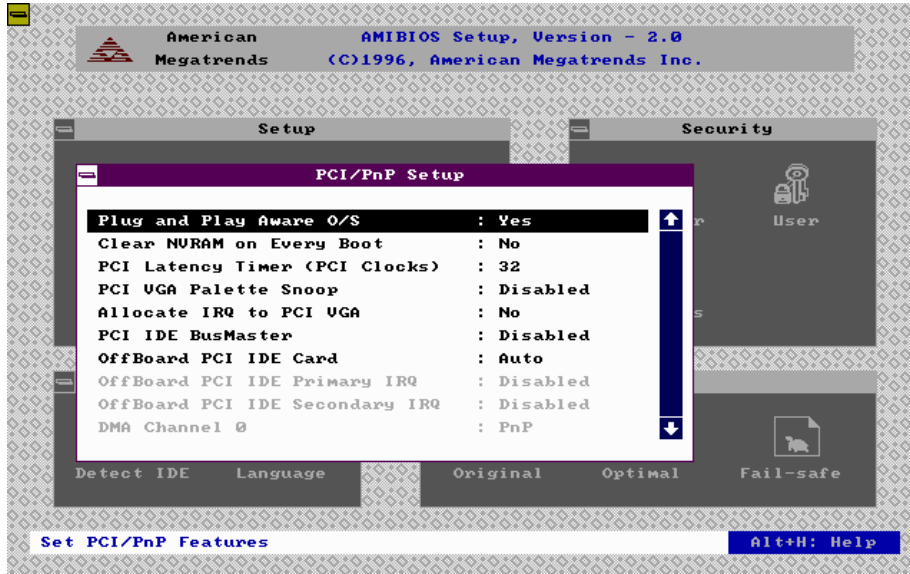


Fig. 23 PCI/PnP Setup Menu

Plug and Play Aware OS: Set this option to *Yes* if the operating system installed in the computer is Plug and Play-aware. AMIBIOS only detects and enables PnP ISA adapter cards that are required for system boot. The Windows 95 operating system detects and enables all other PnP-aware adapter cards. Windows 95 is PnP-aware. Set this option to *No* if the operating system (such as DOS, OS/2, Windows 3.x) does not use PnP. *You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.* The settings are *No* or *Yes*. The Optimal and Fail-Safe default settings are *No*.

Clear NVRAM on Every Boot: Normally, you leave this option *No*. Select *Yes* to reset ESCD when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such as serious conflict. The default setting is *No*.

PCI Latency Timer (PCI Clocks): This option sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. 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: This option must be set to *Enabled* if any ISA adapter card installed in the computer requires VGA palette snooping. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

PCI IDE BusMaster: Set this option to *Enabled* to specify that the IDE controller on the PCI local bus has bus mastering capability. The settings are *Disabled* or *Enabled*. 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 used in the computer. You must also specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller card is installed. If an offboard PCI IDE controller is used, the onboard IDE controller on the motherboard is automatically disabled. The settings are *Auto, Slot1, Slot2, Slot3, Slot4, Slot5* or *Slot6*.

If *Auto* is selected, AMIBIOS automatically determines the correct setting for this option. The Optimal and Fail-Safe default settings are *Auto*.

OffBoard PCI IDE Primary IRQ: This option specifies the PI interrupt used by the primary IDE channel on the offboard PCI IDE controller. The settings are *Disabled, INTA, INTB, INTC, INTD, or Hardwired*. The Optimal and Fail-Safe default settings are *Disabled*.

OffBoard PCI IDE Secondary IRQ: This option specifies the PCI interrupt used by the secondary IDE channel on the offboard PCI IDE controller. The settings are *Disabled, INTA, INTB, INTC, INTD, or Hardwired*. The Optimal and Fail-Safe default settings are *Disabled*.

Assign IRQ to PCI VGA Card: Set this option to *Yes* if the PCI VGA used IRQs. AMIBIOS will assign an IRQ to PCI VGA adapter cards. Set this option to *No* if the PCI VGA card do not use IRQ. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *Yes*.

DMA Channel 0/1/3/5/6/7: These options specify the DMA Channels are used on. These options allow you to specify DMA Channels for use by legacy ISA adapter cards.

These options determine if AMIBIOS should remove a DMA from the pool of available DMAs passed to BIOS configurable devices. The available DMA pool is determined by reading the ESCD NVRA. If more DMAs must be removed from the pool, the end user can use these *PnP* setup options to remove the DMA by assigning the option to the *ISA/EISA* setting. Onboard I/O is configurable by AMIBIOS. The DMAs used by onboard I/O are configured as *PnP*.

The settings are *PnP* or *ISA/EISA*. The Optimal and Fail-Safe default settings are *PnP*.

IRQ3/IRQ4/IRQ5/IRQ7/IRQ9/IRQ10/IRQ11/IRQ12/IRQ14/IRQ15:

These options specify the bus that the named interrupt request lines (IRQs) are used on. These options allow you to specify IRQs for use by legacy ISA adapter cards.

These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to BIOS configurable devices. The available IRQ pool is determined by reading the ESCD NVRA. If more IRQs must be removed from the pool, the end user can use these PCI/PnP Setup options to remove the IRQ by assigning the option to the *ISA/EISA* setting. Onboard I/O is configurable by AMIBIOS. The IRQs used by onboard I/O are configured as *PCI/PnP*.

The settings are *PCI/PnP* or *ISA/EISA*. The Optimal and Fail-Safe default settings are *PCI/PnP*.

4.6.6 PERIPHERAL SETUP

Peripheral Setup Options are displayed by choosing the Peripheral Setup icon from the WINBIOS Setup main menu. All Peripheral Setup options are described in this section.

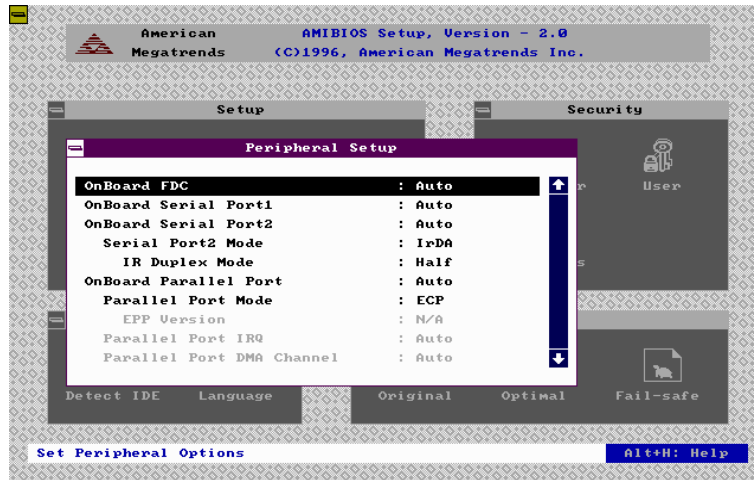


Fig. 24 Peripheral Setup Menu

Onboard FDC: This option enables the floppy drive controller on the motherboard. The settings are *Enabled*, *Disabled* or *Auto*. The Optimal and Fail-Safe default settings are *Auto*.

Onboard Serial Port1: This option enables serial port 1 on the motherboard and specifies the base I/O port address for serial port 1.

The settings are *3F8h*, *2F8h*, *3E8h*, *2E8h*, *Disabled* or *Auto*. The Optimal and Fail-Safe default settings are *Auto*.

Onboard Serial Port2: This option enables serial port 2 on the motherboard and specifies the base I/O port address for serial port 2.

The settings are *3F8h*, *2F8h*, *3E8h*, *2E8h*, *Disabled* or *Auto*. The Optimal and Fail-Safe default settings are *Auto*.

Serial Port2 Mode: This option enables IrDA function on the motherboard. The settings are *Normal*, *Sharp-IR* and *IrDA*. The default setting is *Normal*.

IR Duplex Mode: This option is available when Serial Port 2 Mode is set at *IrDA* or *Sharp-IR*. You can chosen *Full* or *Half* Mode.

Onboard Parallel Port: This option enables the parallel port on the motherboard and specifies the parallel port base I/O port address. The settings are *378h*, *278h*, *3BCh*, *Disabled* or *Auto*. The Optimal and Fail-Safe default settings are *Auto*.

Parallel Port Mode: This option specifies the parallel port mode. ECP and EPP are both bidirectional data transfer schemes that adhere to the IEEE P1284 specifications. The settings are:

Setting	Description
<i>Normal</i>	The normal parallel port mode is used. This is the default setting.
<i>Bi-Dir</i>	Use this setting to support bidirectional transfers on the parallel port.
<i>EPP</i>	The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bidirectional data transfer driven by the host device.
<i>ECP</i>	The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve transfer rates of approximately 2.5 Mbs. ECP provides symmetric bidirectional communications.

Table 12

EPP Version: This option is only available if the EPP mode is selected. The settings are *1.7* or *1.9*.

Parallel Port IRQ: This option is only available if the setting for the Onboard Parallel Port option is a *378h*, *278h* or *3BCh*. The settings are *5* or *7*.

Parallel Port DMA Channel: This option is only available if the setting for the **Parallel Port Mode** option is *ECP*. The settings are *0*, *1*, or *3*.

Onboard IDE: This option specifies the onboard IDE controller channels that will be used. The settings are *Primary*, *Secondary*, *Both*, or *Disabled*. The Optimal and Fail-Safe default settings are *Both*.

4.7 SECURITY

4.7.1 WINBIOS PASSWORD SUPPORT

WINBIOS Setup has an optional password feature. The system can be configured so that all users must enter a password every time the system boots or when WINBIOS Setup is executed. You can set either a Supervisor or a User password.

If You Do Not Want to Use a Password

Just press <Enter> when the password prompt appears.

The password check option is enabled in Advanced Setup by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when WINBIOS is run). The password is stored in CMOS RAM. The following screen appears when you select the password icon from the WINBIOS Setup main menu:

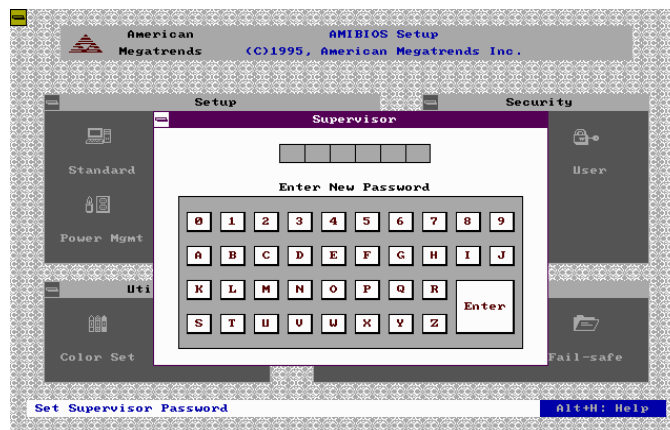


Fig. 25 Password Input Menu

You can enter a password by:

- ?? typing the password on the keyboard,
- ?? selecting each letter via the mouse, or
- ?? selecting each letter via the pen stylus.

Pen access must be customized for each specific hardware platform.

When you select Supervisor or User, AMIBIOS prompts for a password. You must set the Supervisor password before you can set the User password. Enter a 1 - 6 character password. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain CMOS RAM and reconfigure the system.

4.7.2 CHANGING A PASSWORD

Select the Password icon (Supervisor or User) from the Security section of the WinBIOS Setup main menu. Enter the password and press <Enter>. The screen does not display the characters entered. After the new password is entered, retype the new password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. If the new password is entered without error, press <Esc> to return to the WinBIOS Setup Main Menu. The password is stored in CMOS RAM after WinBIOS Setup completes. The next time the system boots, user is prompted for password if the password function is present and is enabled.

4.7.3 ANTI-VIRUS

When the Anti-Virus icon is selected from the Security section of the WinBIOS Setup main menu, WinBIOS issues a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The following screen appears when user select the Anti-Virus icon:

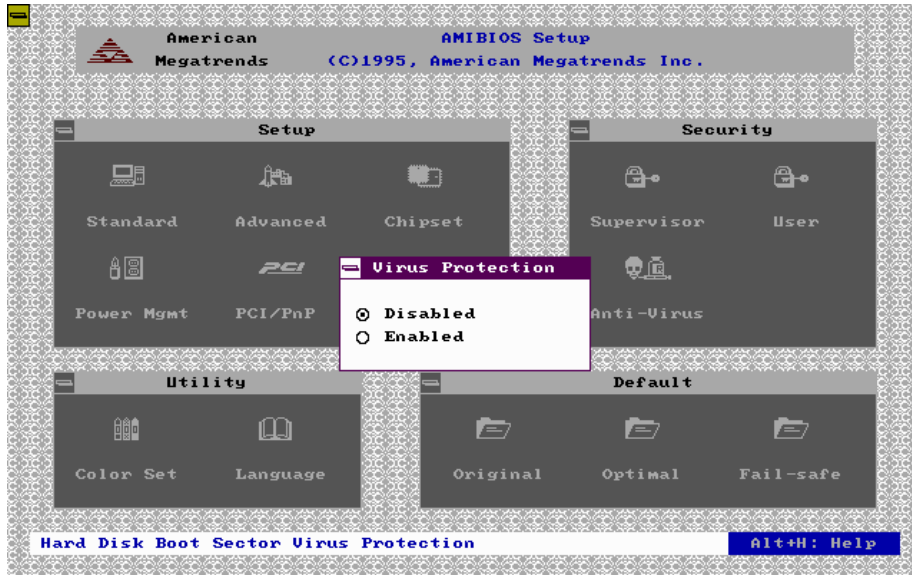


Fig. 26 Anti Virus Menu

The settings are *Enabled* or *Disabled*. If enabled, the following appears when a write is attempted to the boot sector. User may have to type N several times to prevent the boot sector write.

Boot Sector Write!!!
Possible VIRUS: Continue (Y/N)? _

The following is displayed after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard Disk Drive Service:

Format!!!
Possible VIRUS: Continue (Y/N)? _

If the anti-virus feature is *Enabled*, a virus warning message will be displayed when user attempt to format the hard disk drive.

If user select **Continue**, formatting proceeds as normal.

4.8 UTILITY

The following icons appear in this section:

- ?? Color set, and
- ?? Language.

Color Set

Color Set sets the WINBIOS Setup screen colors.

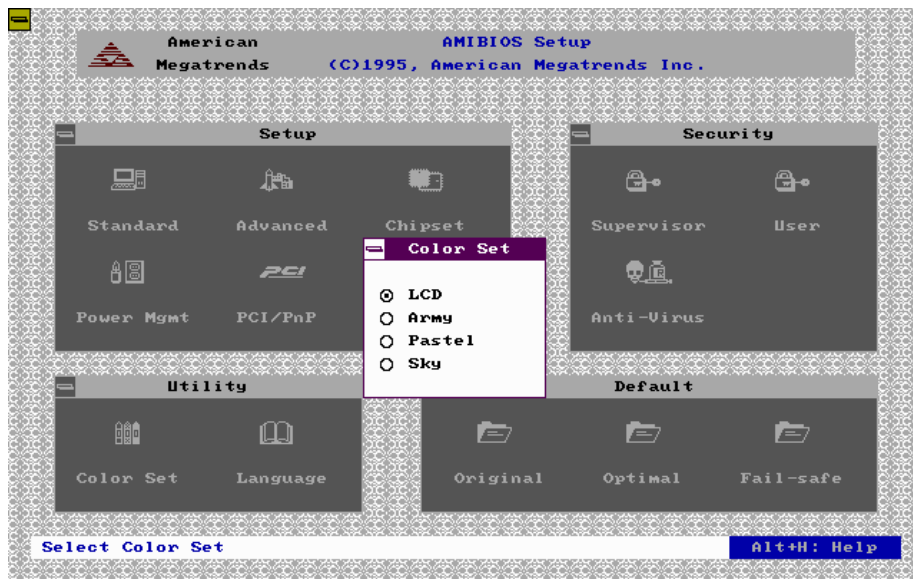


Fig. 27 Color Set Menu

Language

Language allows you to select English, German, or French language screen prompts and messages. This BIOS is an English version.

4.9 DEFAULT

The icons in this section permit user to select a group of settings for all WinBIOS Setup options. Not only can use these icons to quickly set system configuration parameters, user can choose a group of settings that have a better chance of working when the system is having configuration-related problems.

4.9.1 ORIGINAL

Choose the Original icon to return to the system configuration values present in WinBIOS Setup when user first began this WinBIOS Setup session.

4.9.2 OPTIMAL

User can load the optimal default settings for the WinBIOS Setup options by selecting the Optimal icon. The Optimal default settings are best-case values that should optimize system performance. If CMOS RAM is corrupted, the Optimal settings are loaded automatically.

4.9.3 FAIL-SAFE

User can load the Fail-Safe WinBIOS Setup option settings by selecting the Fail-Safe icon from the Default section of the WinBIOS setup main menu.

The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically.

CHAPTER 5

FLASH MEMORY UTILITY

Make sure the system is running in real mode. This utility will not operate if the system is under protected mode or virtual mode. This means that you cannot reprogram the motherboard BIOS under the Windows environment or with any memory management software, including HIMEM.SYS.

To run the utility, change to the directory containing FLASH520.EXE and BIOS file, then at the DOS Prompt, type **FLASH520 BIOSFILE.ROM <Enter>**.

The utility will load the BIOS, and the following message will shrink on the screen:

“Press “Y” to continue, “N” to Reboot”

After the “Y” is pressed, the utility will program the BIOS file to the Flash EPROM. When the process is successful, the following message appears:

“Press Any Key to Reboot”

Follow the instruction and the system will reboot with new BIOS.

APPENDIX 1

QUICK GUIDE

The table below summaries the CPU frequency and settings of each jumper of the motherboard.

CPU Type	Freq.	Ration	Bus Freq.	Rating Setting		Bus Freq. Setting	
				JP5:		JP6:	
Pentium II	233MHz	3.5x	66MHz	JP5:	1-2 close 3-4 close 5-6 open 7-8 open	JP6:	1-2 close
Pentium II	266MHz	4.0x	66MHz	JP5:	1-2 close 3-4 open 5-6 close 7-8 close	JP6:	1-2 close
Pentium II	300MHz	4.5x	66MHz	JP5:	1-2 close 3-4 open 5-6 close 7-8 open	JP6:	1-2 close

Table 13: Jumper Setting (I)

The table below summaries the functions and setting of other jumpers of the board.

Function		Jumper Settings
Clear RTC CMOS Date	Normal	JP3: 2-3 close
	Clear	JP3: 1-2 close
Flash EPROM	5V Flash	JP1: 2-3 close
	12V Flash	JP1: 1-2 close

Table 14: Jumper Setting (II)

Appendix A
