Electronic Emission Notices

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions contained in this manual, may cause harmful interference to radio and television communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- REORIENT OR RELOCATE THE RECEIVING ANTENNA
- INCREASE THE SEPARATION BETWEEN THE EQUIPMENT AND THE RECEIVER
- CONNECT THE EQUIPMENT INTO AN OUTLET ON A CIRCUIT DIFFERENT FROM THAT OF THE RECEIVER
- CONSULT THE DEALER OR AN EXPERIENCED AUDIO/TELEVISION TECHNICIAN

NOTE: Connecting this device to peripheral devices that do not comply with Class B requirements, or using an unshielded peripheral data cable, could also result in harmful interference to radio or television reception.

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.

Copyright

This manual is copyrighted with all rights reserved. No portion of this manual may be copied or reproduced by any means.

While every precaution has been taken in the preparation of this manual, no responsibility for errors or omissions is assumed. Neither is any liability assumed for damages resulting from the use of the information contained herein.

Trademarks

All brand names, logos and registered trademarks mentioned are property of their respective owners.

Table of Contents

HARDWARE CONFIGURATION 3
Key Features 3
Motherboard Layout (Model Code No. - 35880101) 5
Jumper Settings 6
JP5, JP6, JP7 - CPU Type Selection 6
JP2 - Auto CPU Core-Voltage Selection 6
JP4 - CMOS Clear 6
JP8, JP15 - PNP BIOS Program Voltage 6
Memory Configuration 7
Installation 8
Installing the Retention Mechanism 8
Installing the Processor 8
Installing the Spacer 9
Installing a DRAM Module 9

BIOS SETUP 10
Starting Setup 10
Main Menu 10
Standard CMOS Setup 12
Advanced CMOS Setup 13
Advanced Chipset Setup 13
Power Management Setup 13
PCI / Plug and Play Setup 13
PNP/PCI Configuration Setup 14
Peripheral Setup 14
Change Supervisor/User Password 14
Flash Update Procedure 15

HARDWARE CONFIGURATION

The Pentium® II motherboard is based on the Intel® 82440LX Chipset. The chipset is a highly integrated solution for a cost-effective and compact motherboard. The motherboard supports 3.3V EDO and SDRAM. Features on-board include super-I/O, Ultra DMA33, PCI bus master IDE, AGP Ver 1.0, PCI Ver 2.1 compliant, USB, VRM 8.1 compliant, ECC, LM79/75 System monitoring (optional).

Key Features

Processor

- Full support for the Intel® Pentium II processors using Slot 1connector.
- Supports 60 and 66MHz bus speed including all Pentium® II processors operating from 200MHz to 333MHz.

VRM (Voltage Regulator Modules) on Board

- Flexible motherboard design with on-board VRM 8.1, easy to upgrade with Intel's future overdrive processors.

Cache

Processor built-in L2 cache (Tag RAM and 2 or 4 BSRAMs for 256KB or 512K).

System Memory

- Up to 384MB (SDRAM) or 768MB (EDO).
- A total of three 168-pin DIMM sockets(3.3V EDO/Synchronous DRAM).
- Supports 3.3V Extended Data Output (EDO) DRAM at 50 and 60ns speed and Synchronous DRAM up to 66MHz.

Memory Organization

Three 168-pin DIMM Sockets

- Supports single-density DIMMs of 1MB, 2MB, 4MB, 8MB and 16MB depth (x64 or 72).
- Supports double-density DIMMs of 2MB, 4MB, 8MB, 16MB and 32MB depth (x64 or 72).
- Supports Error Checking Correction (ECC) using parity DRAM modules.
- Banks of different DRAM types depths can be mixed.

On-Board I/O

- Two PCI fast IDE ports supporting up to 4 ATA2, Ultra DMA 33 IDE devices.
- Supports Bus Master IDE, PIO mode 4 (up to 22M bytes/sec) and Ultra DMA 33 (up to 33M bytes/sec) transfer.
- One ECP/EPP parallel port (via a header).
- Two 16550-compatible UART serial ports (via a header).
- One floppy port supporting two FDDs of 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB formated capacity.
- Two USB ports (via a header).
- PS/2 keyboard port (factory option for PS/2 Type).

- PS/2 mouse port (via a header).
- Infrared (IrDA) support (via a header).

System BIOS

- 1MB or 2MB flash BIOS supporting PnP, APM, ATAPI, ACPI and Windows® 95.
- Jumper selection for 5V or 12V flash memory voltage.
- Auto detects and supports LBA hard disks with formatted capacities over 8.4GB.
- Easily upgradable by end-user.

Plug-and-Play

- Supports plug-and-play specification 1.1.
- Plug-and-play for DOS, Windows® 3.X as well as Windows® 95.
- Fully steerable PCI interrupts.

Power Management

- Supports SMM, APM and ACPI.
- Break switch for instant suspend/resume on system operation.
- Energy star “Green PC” compliant.
- Supports ATX power supply by optional transfer wire.

Expansion Slots

- 1AGP slot (Ver. 1.0, 1 x / 2 x mode supported).
- 4 PCI bus master slots (Rev. 2.1 compliant, with 1 PCI slot sharing with 1 ISA slot).
- 3 ISA slots (1 ISA slot sharing with 1 PCI slot).

PC97

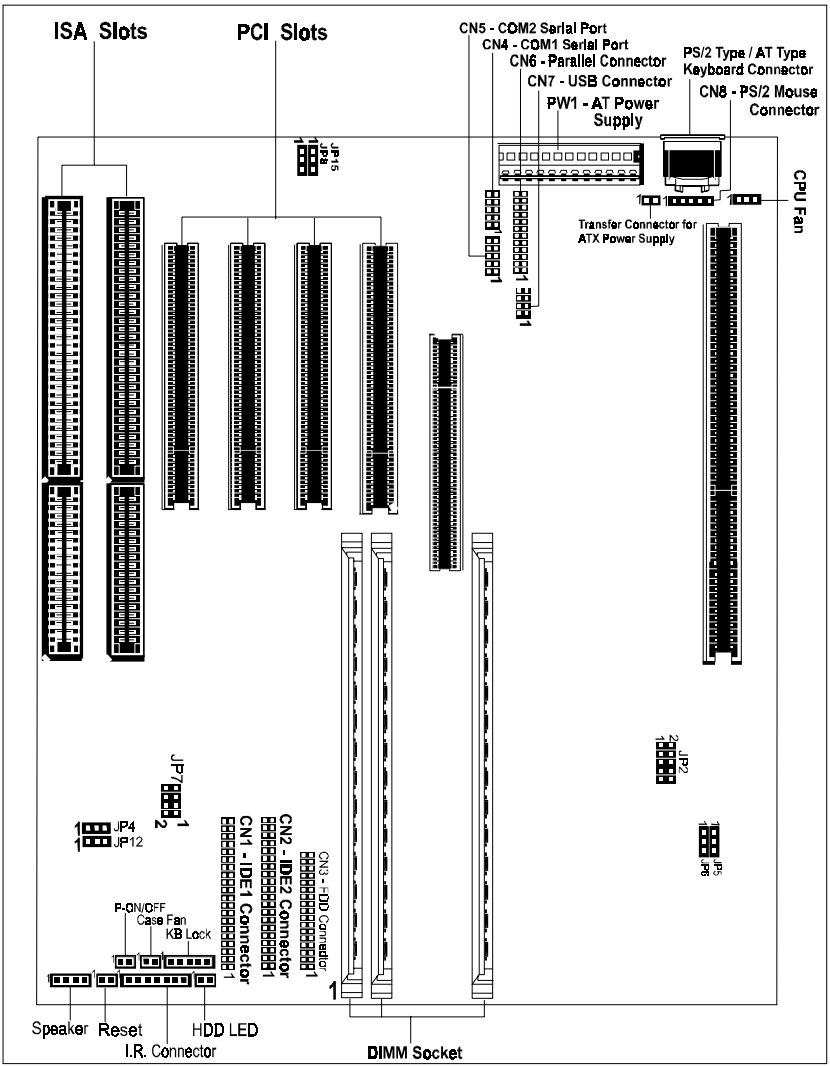
- PC97 ready.

System monitoring (optional)

- LM79/75 hardware monitoring Circuitry is supported, provides voltages, temperatued, fan speeds, etc. monitoring.

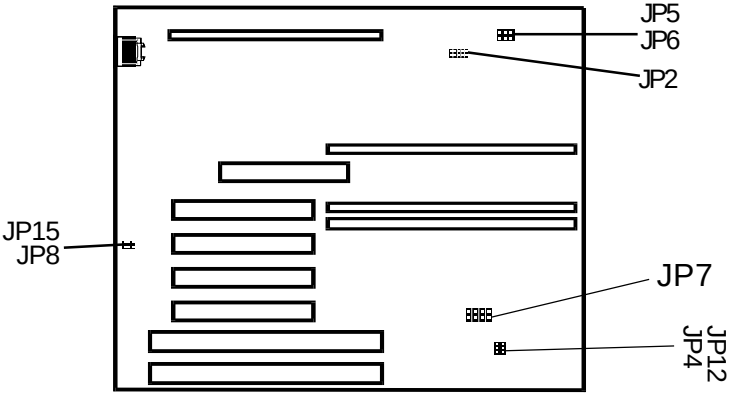
Motherboard Layout (Model Code No. - 35880101)

The following diagrams show the relative positions of the jumpers, connectors, major components and banks on the motherboard.



Jumper Settings

This chapter explains how to configure the motherboard's hardware. Before using your computer, make sure all jumpers and DRAM modules are set correctly. Refer to this chapter whenever in doubt.



JP5, JP6, JP7 - CPU Type Selection

CPU Type and Speed	JP5 JP6	JP7
Pentium II - 200MHz	1 1	1 2
Pentium II - 233MHz	1 1	1 2
Pentium II - 266MHz	1 1	1 2
Pentium II - 300MHz	1 1	1 2
Pentium II - 333MHz	1 1	1 2

JP2 - AUTO CPU Core-Voltage Selection (All open)

JP4 - CMOS Clear

JP4	Selection
2-3	CMOS Clear
1-2	Normal (default)

JP8, JP15 - PNP BIOS Program Voltage

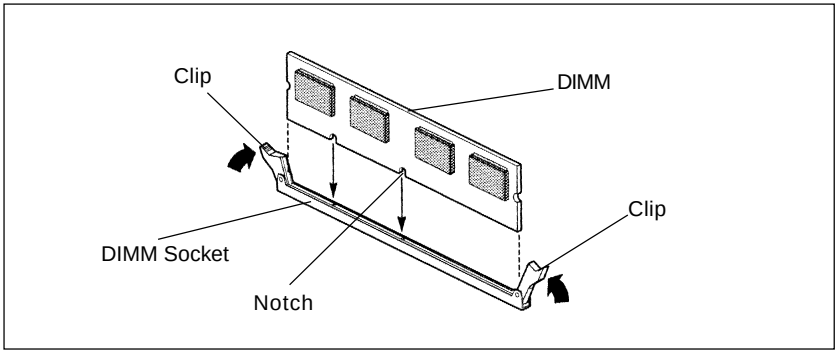
JP8&JP15 are pre-installed in the factory. They should NOT be altered by the users.

Memory Configuration

You can install up to 384MB(SDRAM) or 768MB(EDO) of memory in the motherboard DIMM sockets. The board has DIMM sockets arranged as banks 0, 1 and 2. You can install DIMMs in any of the four banks, and use different size DIMMs in different banks. The BIOS detects the size and type of installed memory.

To install DIMMs,

1. Turn off all peripheral devices connected to the computer. Turn off the computer.
2. Remove the computer cover and locate the DIMM sockets.
3. Holding the DIMM by the edges, remove it from its antistatic package.
4. Make sure the clips at either end of the socket are pushed away from the socket.



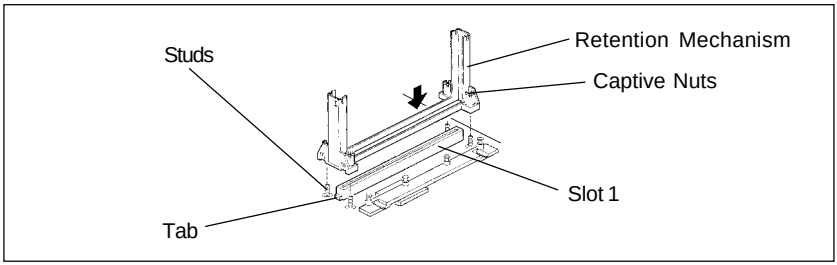
5. Position the DIMM above the socket. Align the two small notches in the bottom edge of the DIMM with the keys in the socket.
6. Insert the bottom edge of the DIMM into the socket.
7. When the DIMM is seated, push down on the top edge of the DIMM until the retaining clips at the ends of the socket snap into place. Make sure the clips are firmly in place.
8. Replace the computer cover.
9. If you installed a DIMM with ECC memory, start the computer and use the ECC Configuration feature in Setup to enable the use of ECC.

Instalation

Installing the Retention Mechanism

To install the retention mechanism, follow these steps:

1. Locate Slot 1 and the four attachment studs on the motherboard.
2. To position the mechanism, orient it as shown in figure. The tab on the connector fits into a notch in the base of the mechanism. When properly seated, the base of the mechanism is flush with the motherboard.

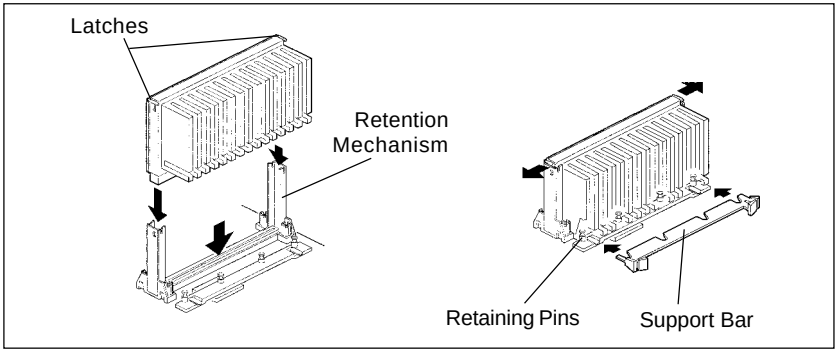


3. Finger tighten all four captive nuts to make sure they start correctly on the threads of the attachment studs.
4. To secure the mechanism, tighten the captive nuts.

Installing the Processor

To install the processor, follow these steps:

1. Insert the processor in the retention mechanism.
2. Press down on the processor until it is firmly seated in the Slot 1 connector and the latches on the processor lock into place.



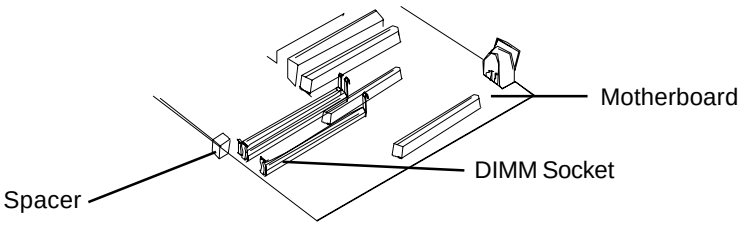
3. Slide the top heatsink support bar onto the retaining pins of the support's base as shown in figure.

Setting the Processor Speed

After you install the processor and install the motherboard, set the processor speed by jumpers. Change any jumper settings as detailed in the manual.

Installing the Spacer

When installing the motherboard remember to insert the SPACER at the corner near the DIMM sockets to provide better support for future DRAM modules.



Installing a DRAM Module

To install a DRAM module,

- Determine the desired amount of memory and acquire the necessary DRAM modules.
- Note that a DRAM module has a polarity notch at one end so that it fits into a socket only one way. Hold the module by the edges. Do not touch the shiny contacts.
- Align the DRAM module edge connector with the slot at the center of the socket.
- Position the DRAM module to the left of the socket and press the DRAM module edge connector firmly into the socket.

  If you have misaligned or only partially seated the module, remove the DRAM module gently and reinstall it.

BIOS SETUP

This chapter discusses Setup Program built into the ROM BIOS. The Setup Program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM, which retains the setup information when the power is turned off.

Starting Setup

The BIOS is immediately activated when you turn on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system .

While the BIOS is in control, the Setup Program can be activated :

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test)

Hit <DEL> if you want to run SETUP

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

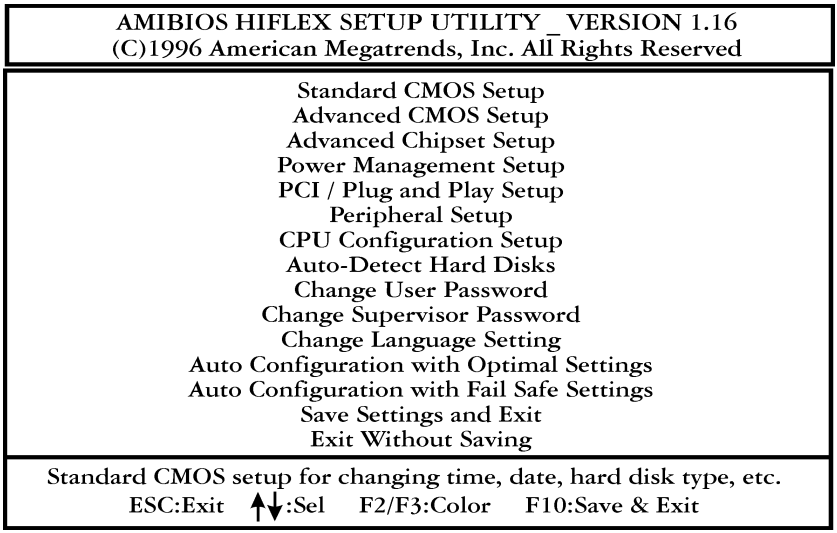
PRESS F1 TO CONTINUE

In Case of Problems

If, after making and saving system changes with the Setup Program, you discover that your computer does not reset, use the BIOS defaults to override the CMOS settings.

Main Menu

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



(Note : The figures of BIOS Setup Menu included here only show a typical case, and may not be exactly the same as the one on your unit.)

Note that a brief description of each highlighted item will appear at the bottom of the screen.

Standard CMOS Setup	For Changing time, date, hard disk type, etc.
Advanced CMOS Setup	For Configuring system options.
Advanced Chipset Setup	For Configuring chipset features.
Power Management Setup	For Configuring Power Management features.
PCI/Plug and Play Setup	For Configuring PCI/Plug&Play features.
Peripheral Setup	For Configuring peripheral features.
CPU configuration Setup	For Configuring CPU configuration features.
Auto-Detect Hard Disks	For auto-detecting all hard disk parameters.
Change User/Supervisor Password	Changes, sets, or disables password. It allows you to limit access to the system and Setup Program.
Auto Configuration with Optional Settings	Load Configuration settings giving the highest performance.
Auto Configuration with Fail Safe Settings	Load fail safe Configuration settings.
Save Settings and Exit	Writes the Current settings to COMS and exits.
Exit Without Setting	Exits without saving the current settings.

Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes, one or more setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> key to select the desired value in each item.

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

Date (mm/dd/yyyy) : Mon Oct 27, 1997          Base Memory : 0 KB
Time (hh/mm/ss)   : 15:45:00                  Extd Memory : 0 MB

Floppy Drive A:     1.44 MB 3 ½
Floppy Drive B:     Not Installed

                                                    LBA  Blk  PIO  32Bit
              Type    Size  Cyln  Head  WPcom  Sec  Mode Mode Mode Mode
Pri Master  : Auto                                             On
Pri Slave   : Auto                                             On
Sec Master  : Auto                                             On
Sec Slave   : Auto                                             On

Boot Sector Virus Protection     Disabled

Month :  Jan - Dec                          ESC:Exit ↑↓ :Sel
  Day :   01 - 31                           PgUp/PgDn:Modify
 Year : 1901 - 2099                         F2/F3:Color
```

(Note : The figures of BIOS Setup Menu included here only show a typical case, and may not be exactly the same as the one on your unit.)

Date The date format is <day-of-the-week>. <day> <year>.

Time The time format is <hour> <Minute> <second> displayed in 24-hour military-time clock. For example, 1 p. m. is displayed as 13:00:00.

Floppy Drive A: / Floppy Drive B : This category identifies the types of floppy disk drive A or drive B that has been installed in the computer.

Pri Master/ Pri Slave/ Sec Master/ Sec Slave These categories identify the types of the two channels that have been installed in the computer. There are 46 predefined types and four user definable types in BIOS. Type 1 to Type 46 are predefined. Type “user” is user-definable.

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

If you select Type “User”, you will need to know the information listed below. Enter the information directly from the keyboard and press <Enter>. This information should be included in the documentation from your hard disk vendor or the system manufacturer.

If the controller of the HDD interface is ESDI, the selection shall be “Type1”.

If the controller of the HDD interface is SCSI, the selection shall be “Not Installed”.

If you select Type “Auto”, the BIOS will auto-detect the HDD and CD-ROM drive at the POST stage and show the IDE for the HDD and CD-ROM drive.

Type	-Drive type
Cyln	-Number of cylinders
Head	-Number of heads
WPcom	-Write precom
Sec	-Number of sectors
LBA Mode	-Mode type
Blk Mode	-Mode type
PIO Mode	-Mode type
32Bit Mode	-Mode type

If a hard disk has not been installed, select “Not Installed” and press <Enter> .

Boot Sector Virus Protection This category determines whether the boot sector virus protection is enabled or not

Advanced CMOS Setup

This section allows your to configure you system for basic operation. You have the opportunity to select the system’s default speed, boot-up sequence, keyboard operation, shadowing and security.

Advanced Chipset Setup

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

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It must be stated that these items should not be altered. The default settings have been chosen because they provide the best operating conditions for your system.

Power Management Setup

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

PCI / Plug and Play Setup

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

PNP/PCI Configuration Setup

This section describes how to configure the PCI bus system. This section covers some very technical items and it is recommended that only experienced users should make any changes to the default settings.

Peripheral Setup

The Peripheral Setup allows the user to configure the onboard IDE controller, floppy disk controller, the printer port and the serial ports.

Change Supervisor/User Password

You can set either supervisor or user password, or both of then. The differences between are:

Supervisor Password :	You can enter the Setup Program and change Supervisor/the User Password.
User Password :	You can enter the Setup Program but only change the User Password.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to Six characters in length, and press<Enter>. The new password will clear the previously entered password from the CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and operate without a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will be displayed to confirm that the password is disabled.

PASSWORD DISABLED.

Once the password is disabled, the system will reset and you can enter the Setup Program freely.

When a password is enabled, you will be prompted to enter it every time you try to enter setup. This prevents an unauthorized person from changing any setting of your system configuration.

In addition, when a password is enabled, you can require the BIOS to request a password every time your system is rebooted. This would further prevent unauthorized use of your computer.

The password requirement is defined by the Password Check Option of the Advanced CMOS Setup Menu. If the Password Check Option is set to “Always”, the password will be required both at resetting and at entering setup. If the option is set to “Setup”, the prompt only appears when you try to enter setup.

Flash Update Procedure

A program AMIFLASH.COM is included in the utility diskette. The user is recommended to follow the procedure below to update the flash BIOS.

1. Create a DOS-bootable floppy diskette. Copy the new BIOS file (just obtained or downloaded) and the utility program AMIFLASH.COM to the diskette.

2. Allow the PC system to boot from the DOS diskette.

3. At the DOS prompt, key in

   AMIFLASH.COM

   and hit <ENTER>

4. The question: “Save Existing BIOS?” is displayed.

   Key in “N” if there is no need to save the existing BIOS content...

   Key in “Y” if a backup copy of the existing BIOS is needed.
   (A file name has to be assigned to the existing BIOS binary file.)

5. Enter the file name of the new BIOS. (e.g.: PPLX0xxx.ROM)

6. The program utility will automatically update BIOS and restart computer.