PowerPro VX

Pentium Main Board

User Manual

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Chapter 1 Introduction

The PowerPro VX have been especially designed for file server, workstation and professional users. It can support a wide range of processors, including all up-to-date Intel Pentium processors, AMD K5/K6 processors, and as well as Cyrix 6x86/6x86L/6x86MX processors. It also takes into account, as much as possible, all future CPUs.

The PowerPro VX uses **SOFT MENU™ technology**, which means that all the processor's parameters can be configured without using DIP switches or hardware jumpers. The configuration is entirely achieved through a "Soft Switch" that allows the user to set CPU speed and operating voltage with ease.

The PowerPro VX uses Intel 430VX series chip set with 512K Level-2 Pipeline Burst SRAM on board. Two 168-pin DIMM slots meet the requirements for all memory configurations required by higher level computing. The 168-pin DIMM slots support fast page DRAM, EDO DRAM, and SDRAM for next generation 64-bit systems.

The PowerPro VX also provides two Universal Serial Bus (USB) ports and meets the Concurrent PCI Rev. 2.1 standard. It also supports IDE interface for Fast HDD (Mode 0~4) and IDE Bus Master. These features also meet present and future interface standards and needs.

System BIOS features include Plug-and-Play (PnP), Advanced Power Management, as well as PowerPro VX's unique CPU operating frequency and voltage setup feature in order to meet modern computing demands.

Chapter 1

SPECIFICATIONS

1. Jumperless CPU setup with "SOFT MENU™"

- Setup of the mainboard's CPU frequency and voltage without jumpers or DIP switches.
- Software reside in system BIOS ROM.
- Modification of CPU operating voltage and frequency directly on screen.

2. Versatile CPU support with ZIF Socket 7

- Switching type voltage regulator for a more stable CPU operation.
- Supports 50, 55, 60, 66 MHz bus clock and as well as 75/83MHz bus clock reserved.
- Supports Intel Pentium® CPUs: 100MHz to 200MHz and Pentium with MMX processors from 166MHz to 233MHz.
- Supports AMD-K5™ CPUs: PR 75 to PR 133/ PR 166, AMD-K6™ CPUs: PR 166 to PR 200 and PR 233
- Supports Cyrix 6x86™ CPUs: P120+, P133+, P150+, P166+, and 6x86MX
- Reserved circuitry to support future CPUs

3. Chipset

- Intel 430VX chipset
- Supports standard version PCI 2.1

4. L2 Cache Memory

- Built-in 512K Pipeline Burst SRAM cache memory

5. System DRAM

- **Two** 168-pin **DIMM** sockets can support FP, EDO and Synchronous

DRAM (SDRAM) for up to 128MB memory size.

6. System BIOS

- AWARD BIOS
- Built-in user-friendly SOFT-Menu to set all CPU parameters.
- Supports Plug-and-Play (PnP)

7. Multi I/O features

- Built-in two Universal Serial Bus (USB) ports
- Two fast IDE channels (PIO mode 0~4, Bus Master) supporting four IDE devices
- One EPP/ECP parallel port and two 16550 serial ports
- Two floppy disk drive connectors (FDD) (360K, 720K, 1.2M, 1.44M and 2.88M)

8. Other features

- Standard AT architecture dimensions (223mm x 190mm)
- Three ISA bus slots and three PCI bus slots
- Supports two bootable hard disks to run two different operating systems

Chapter 1

LAYOUT DIAGRAM

Jaton Power Pro VX
Pentium AT Main Board

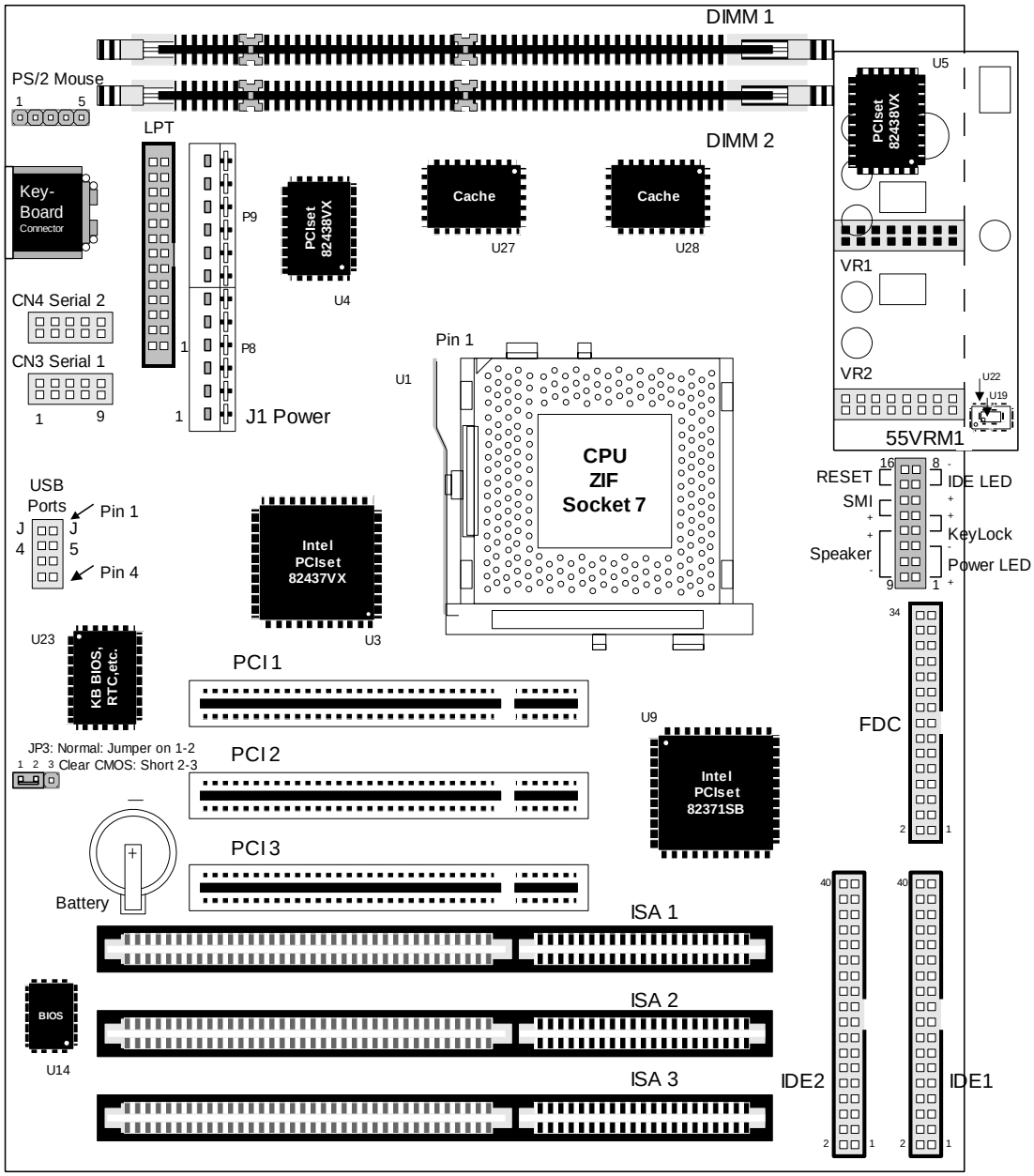


Fig 1-1 PowerPro Layout diagram ©1997, Jaton Corp.

SYSTEM BLOCK DIAGRAM

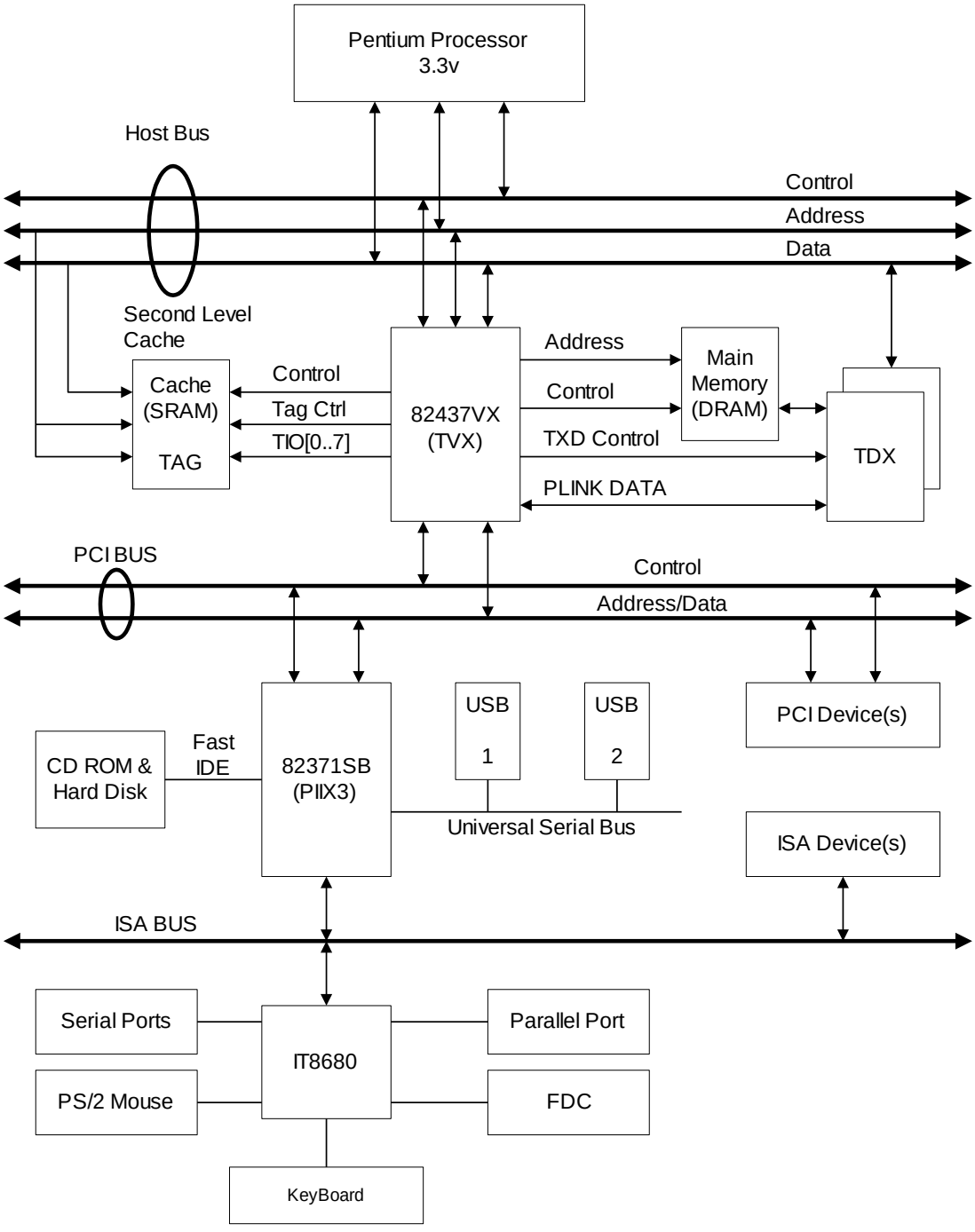


Fig. 1-2 System block diagram

Chapter 2 Main Board Installation

This PowerPro VX main board not only provides all standard equipment for classic personal computers, but also provides great flexibility for meeting future upgrade demands. This chapter will introduce step by step all the standard equipment and will also present, as completely as possible future upgrade capabilities. This main board is able to support all Intel Pentium including P54C , P55C , Cyrix 6x86, 6x86L, 6x86MX and AMD-K5, K6 processors now on the market. (For details, see specifications in Chapter 1.) However, we cannot guarantee that the description given in this manual on the circuitry of your main board will work for processors not listed in Chapter 1. Please be informed for further information about future CPU support.

This chapter is organized according the following features:

- Standard external connectors
- Jumpers and switches
- Presentation and Installing of the CPU.
- Installing the system memory.

Before proceeding with the installation

- Note to use a power supply that is for AT since this main board is of AT form factor.
- **Before installing the main board or making any hardware modification, be sure either the mechanical switch of AT power supply is turn off or the electric power cord is unplugged** to avoid any electrical damages to the hardware.

User friendly instructions

Our objective is to enable the novice computer user to perform the installation by themselves. We have attempted to write this document in a very clear, concise and descriptive manner to help overcome any obstacles you may face during installation. Please take time to read this manual thoroughly.

EXTERNAL CONNECTORS

In order to connect external devices to the main board, several cables and plugs have to be connected to proper connectors located on the main board. Pay close attention to the orientation of the cables and the position of the first pin of the connector.

PN1 - Keylock and Power LED connector

This connector allow you to connect the Keylock switch and Power LED indicator from your case to the connector (PN1) on the main board.

Pin number	Name or significance of signal
1	+5VDC [Power LED]
2	No connection
3	Ground [Power LED]
4	Keyboard inhibit Signal
5	Ground

The "Keylock" is used to lock the computer's keyboard. When you lock the keyboard from your computer's switch panel, the computer keyboard will not function unless it is unlocked using the key or disconnect the Keylock switch.

PN1 - HD-LED (HDD LED) connector

This connector allow you to connect the two-thread IDE LED connector cable from case to the main board PN1 pin 7 (anode) and 8 (cathode). The IDE LED will light up when the hard disk drive is accessed.

PN1 - Speaker connector

This connector allow you to connect your PC Speaker to the Main Board.

Pin number	Name or significance of signal
9	Sound Signal
10	Ground
11	Ground
12	+5VDC

PN1 - SMI (Hardware Suspend) switch

There is no specific orientation. Connect the two-thread hardware suspend plug to the PN1 pin 13 and 14. This feature is usually not supported by case manufacture.

Pin number	Name or significance of the signal
13	+3VDC
14	Suspend

PN1 - REST (Hardware Reset) switch

There is no specific orientation. Connect the two-thread hardware reset cable to the PN1 connector pins on the main board.

Pin number	Name or significance of signal
15	Hardware reset signal
16	Ground

J1 - AT Power connector

These have a specific orientation. The three warning marks indicate that if you make a mistake in pin number or connection orientation, you could destroy your equipment. During installation, you just need to connect to the correct pins and in the correct orientation, and to connect connector of the power supply unit to the connector on the main board.

Pin number	Name of the signal or signification	Pin number	Name of the signal or signification
1	Power Good Signal	7	Ground
2	+5V	8	Ground
3	+12V	9	-5V
4	-12V	10	+5V
5	Ground	11	+5V
6	Ground	12	+5V

I/O Interface

Mouse - PS/2 Mouse connector

There is a 5-pin PS/2 mouse port on the main board. Connect the PS/2 Mouse connector (included) to the main board. Notice the pin-2 on the 5-pin header does not have any wire. The PS/2 mouse mini-din connector has an orientation pin. Match the PS/2 Mouse connector with the mini-din port and plug it in.

Pin number on board	Name of the signal or signification
1	Mouse data
2	No connection
3	Ground
4	+5VDC
5	Mouse clock

The "PS/2 Mouse Port" is different from COM1 or COM2 serial port to which you can also connect a Mouse. If you do not have a PS/2 Mouse, you can use a serial mouse and connect it to COM1 or COM2 port.

Keyboard - Keyboard Connector

This connector has an orientation pin. Match and plug your keyboard connector to the connector on the main board.

Pin number	Name of the signal or signification
1	Keyboard data
2	No connection
3	Ground
4	+5VDC
5	Ground
6	Keyboard clock

LPT- Parallel port connector

There is a 26-pin connector on board to connect a 25-pin D-shaped female connector for connecting an External Parallel device to your computer. You may want to change your parallel port setting in BIOS setup to tune up the performance. Refer to Chapter 3 for details.

CN3 and CN4 - Serial Port Connectors

There are two 10-pin connectors on board to connect two 9-pin D-shaped (DB-9) male connectors for connecting External Serial Devices to your computer. You may need to change the Port settings in BIOS Setup if you have a Non-Plug and Play device installed on the main board, such as a internal Non-PnP modem. The CN3 is set to serial port 1 or COM 1 with I/O address 3F8h and the CN4 is set to serial port 2 or COM 2 address 2F8h. Pleas refer to Chapter 3 for details.

J4, J5 USB Universal Serial Bus connectors

There are two 4-pin headers on board to connect two standard USB device

connectors (not provided) for connecting External USB devices.

J4 Pin Number	Description	J5 Pin Number	Description
1	Vcc	1	Vcc
2	SBD0-	2	SBD1
3	SBD0+	3	SBD1
4	Ground	4	Ground

Hard Disk and Floppy Disk Controllers

Connector name	Pin number	Name of the peripheral
IDE 1	40	IDE Channel 1 (Primary)
IDE 2	40	IDE Channel 2 (Secondary)
FDC	34	Floppy Disk connector

JUMPERS AND SWITCHES

JP3 : Delete the contents of the CMOS

This jumper is set on pins 1 and 2 at the factory default. This jumper is used for clearing BIOS setup data in CMOS when you experience difficulties. For instance:

- You have forgotten the password you set.
- You have inappropriately setup the BIOS, and the system become unstable.
- You want to change the flash BIOS to a different version.

First turn off the power switch or unplug the power core to your PC and open the computer cover, then locate the CCMOS jumper (near the Lithium battery) and replace the jumper on pins 2 and 3 for a couple of seconds, then put the jumper back to operation position Pin 1 and 2 to erase the CMOS.

After you have deleted the CMOS information, you need to go back to the BIOS Setup menu, and reset all the items correctly, such as, CPU, date, hour,

FDD and HDD parameters, and etc.

CPU INSTALLATION

Jumperless CPU Configuration Main board

You do not need to setup any jumpers or switches on the PowerPro VX main board for CPU.

Most other main boards require you setup a bunch of jumpers or DIP switches for the type of the CPU you plan to install. Installing a CPU is becoming more and more complex since there are so many different kind of CPU brands and models available in the CPU market place. Not so with PowerPro VX main board. The PowerPro VX main board simplified the CPU installation procedure by eliminating all the jumpers for CPU. The CPU can be easily setup by software. After you have inserted the CPU into the ZIF (Zero Insertion Force) CPU socket, and you have installed necessary display interface card, you can simply turn the computer on. The only thing you will need to do next is to enter BIOS SETUP to configure the CPU speed and certain CPU parameters in the CPU **SOFT MENU™**. You may setup the CPU which is not listed with custom setting. It reserved several circuits in order to be able to support future processors. However, we must clarify that "we have only tested the CPUs listed in Chapter 1", we cannot guarantee that this board will be able to support future products, because we cannot forecast future developments.

Related terminology :

External clock

Also referred to as the external CPU clock, or "Bus clock", it is the input clock of the CPU. For instance, Intel Pentium P90, P120 and P150 all have a 60MHz external CPU clock, but have different internal clock multiplier factors.

Clock multiplier factor

The real operation clock within the CPU is the multiple of the external clock. We refer to this factor as the clock multiplier factor. The four factors possible are 1.5, 2, 2.5 and 3. The factor differs from one CPU to another. For instance, the Intel Pentium 166 CPU has a 66MHz external clock, with a multiplier factor of 2.5, so that the speed of the internal clock is 66MHz x 2.5.

Internal clock

Also referred to as the real internal CPU clock, it is the actual internal operating clock of the CPU. The Internal Clock is a multiple of the external clock and of the clock multiplier factor. For instance, the Intel Pentium 90 CPU has a 60MHz external clock and its clock multiplier factor is 1.5; the Intel Pentium P133 CPU has a 66MHz external clock and its clock multiplier factor is 2.

Internal CPU clock = clock multiplier factor * external CPU clock

AT Bus clock

Also referred to as ISA SPEED, or AT CLOCK, or even ISA Bus clock. Ten years ago, the original specification of AT Bus clock installed in the first generation PC/AT computers was 8MHz, this means that there are some interface cards which can only work at 8MHz. In order to guarantee compatibility with older hardware, we still support 8MHz AT Bus clock, but if your interface card is newer or faster, you can choose a higher speed for the AT Bus clock, in order to increase the transmission rate of the interface cards. But we recommend you not to be too ambitious. An 8MHz setup ensures maximum compatibility.

CPU Voltage - Vcore and Vio

From the voltage point of view, 586 series CPU can be divided into two categories: Single Voltage CPU and Dual Voltage CPUs. Single voltage CPUs include: Intel Pentium P54C series, AMD-K5 and Cyrix 6x86, etc.

Dual voltage CPUs include: Intel P55C with MMX, future AMD CPUs, Cyrix 6x86L and M2.

Dual voltage CPUs requires two different voltages for the power source: Core Voltage (Vcore) and IO Voltage (Vio). Vcore provides all the power for internal processing, and its power consumption is quite important. Vio provides the power necessary for the external interface of the CPU.

P-Rating

The P-Rating is defined by some CPU manufacturers other than Intel to rate the performance of their CPU in comparison with Intel Pentium CPUs. For instance, Cyrix 6x86 P166+ has a higher actual speed compared with Intel Pentium P166, and its internal clock need only be 133MHz versus 166MHz for Intel's product. The internal architecture is different between Cyrix 6x86 and Intel Pentium CPU even they are treated as the same type.

Main Board Installation

Having read the related terminology above, please refer to Appendices B, C or D for more information of your CPU. We suggest you make a note of the specification of your CPU, which will help you to configure your CPU correctly.

CPU Settings:

CPU SOFT MENU

To configure the speed and the voltage of the CPU, you must enter to the **CPU SOFT MENU** in BIOS Setup, which is discussed in Chapter 3 System BIOS.

□ MEMORY MODULE INSTALLATION

When this main board was designed, we not only have taken into account the economy and compatibility, but we also focused on the tremendous performance gain by using SDRAM DIMM.

There are two 168-pin DIMM sockets on board. You may install up to two single sided DIMMs on board. A total of 128MB system memory is supported.

The installation is easy. Simply push the two clips on the DIMM socket ends outward, orientates the notches on the DIMM against the socket keys, and gently push it down. Gradually increase the force you use, and make sure the clips are properly snapped on the module. However, before you proceed with installation, be patient, first following information carefully:

1. **168-pin DIMM modules specifications**

According to the standards defined by JEDEC, there are different types of specifications for 168-pin DIMM sockets. Here are the possible types:

- 3.3V UNBUFFERED DIMM
- 3.3V BUFFERED DIMM
- 5V UNBUFFERED DIMM
- 5V BUFFERED DIMM

Currently, the standard for PC is 3.3V UNBUFFERED DIMM, which is used by this motherboard.

Since the connection between the socket and module is crucial, purchase quality DIMM from a reliable source. The DIMM module board must have a thickness of 1.27±0.1 mm. The Gold coating on the DIMM "Gold Fingers" must have a thickness of 3 to 5 micron.

2. **60ns FastPage Mode or EDO DRAM DIMMs**

If your memory modules are faster than 70ns, say 60ns or 45ns, you can modify

the BIOS settings to speed up the operating speed of the system.

If you set the external CPU clock at 66MHz or more, we recommend you use 60ns or even faster DRAM modules.

3. **Memory error check and correction**

The Intel 430VX chip set used on this main board does not support this feature, since the memory error check and correction feature may not be effective, and since you cannot easily find memory modules with memory check and correction.

4. Memory modules size supported

1Mbitx64 [8MByte], 2Mx64 [16MB], 4Mx64 [32Mb], 8Mx64 [32MB], or 16Mx64 [128MB].

5. Both single sided and double sided memory modules can be used.

6. There are two 168-pin DIMM sockets on the board: DIMM 1 and 2. Please insert the DIMM in ascending order. Note the DIMM 1 and DIMM 2 sockets can support either single sided or double sided memory modules without any limitation.

Chapter 3 System BIOS

The System BIOS is a program located on a Read-Only Memory (ROM) or Flash ROM chip on the main board. This program will not be lost when you turn the computer off. It is the primary channel for the hardware circuit to communicate with the operating system. Its main function is to manage the setup of the main board and parameters of interface cards. It setup simple parameters such as time, date, hard disk drive, as well as more complex parameters such as hardware synchronization, device operating mode, and also include special features such as CPU **SOFT MENU™** to setup CPU voltage and speed and store them in CMOS memory. The system BIOS configuration is one of the key factor for your computer system stability and performance.

! Change the parameters in BIOS with caution

The parameters inside the BIOS are used to setup the hardware synchronization or the device operating mode. If the parameters are not setup correctly, the computer may perform poorly and sometimes may not boot up at all. We recommend that you do not change the parameters inside the BIOS unless you are familiar with them. If you are not able to boot your computer anymore, please refer to the section "Erase CMOS data" in Chapter 2.

When the computer powers up, the System BIOS program takes the control of the computer system. The BIOS first run an auto-diagnostic routine for all the necessary hardware, configures the parameters of the hardware synchronization, and detects all the hardware. Only when these tasks are completed does it give up control of the computer to the program of the next level, which is the Operating System.

After the BIOS has achieved the auto-diagnostic and auto-detection operations, it will display the following message:

PRESS CTRL-ALT-ESC OR DEL KEY TO ENTER SETUP

Three to five seconds after the message is displayed, if you press the **Del** key, or if you press simultaneously the **Ctrl Alt Esc** keys, you will access the BIOS Setup

menu. At that moment, the BIOS will display the following message:

Fig 3 BIOS Setup main menu

In the BIOS Setup main menu of Figure 3, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press **Esc** to quit the BIOS Setup.
- Press (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press **F10** when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/- keys when you want to modify the BIOS parameters for the active option.

🕮 CMOS DATA

What is the CMOS? The CMOS referred here is a memory chip used to store the custom BIOS configuration information, such as, Hard Drive type, custom CPU setting, and etc. This memory device has to be powered by a battery to maintain its content. When the CMOS battery is out of power and the computer is not powered for a period of time, or it has been shorted somehow, you may lose the data stored in CMOS. Therefore, we recommend that you write down all the custom parameters of your hardware, and save it to a safe place.

CPU SOFT MENU™

The CPU can be setup through a programmable switch (CPU **SOFT MENU™**), that replaces traditional manual hardware configuration. This feature allows the user to complete the installation procedures more easily. However, the CPU must be setup according its specifications with the **SOFT MENU™**.

In the first option, you can press <F1> at any time to display all the items that can be chosen for that option.

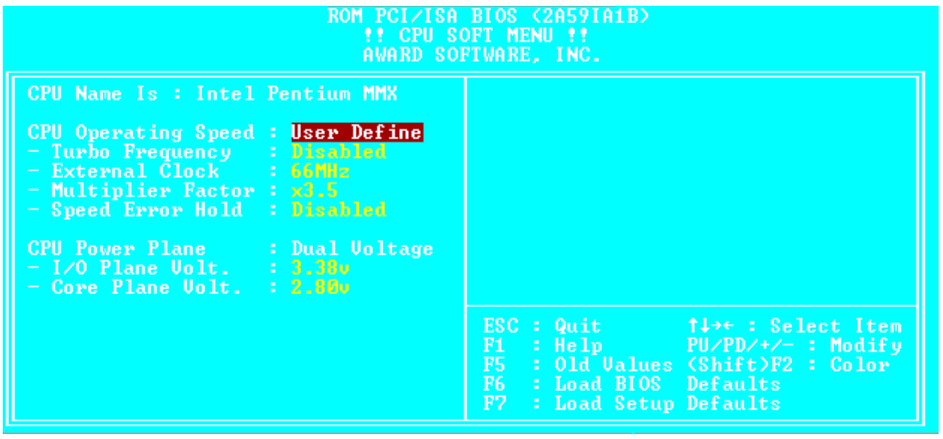


Fig 3-1 CPU SOFT MENU™

CPU Name Is:

- Intel Pentium
- Intel Pentium MMX
- AMD K5
- AMD K6
- Cyrix 6x86
- Cyrix 6x86L
- Cyrix 6x86MX

When you boot the computer, **the main board BIOS will automatically detect the CPU brand and type**. It may use a lower CPU speed if the CPU is not recognized properly.

CPU Operating Speed:

This option sets the CPU speed. Different CPU brands use different techniques to indicate the CPU speed. For example, AMD and Cyrix use P-Rating.
In this field, the CPU speed is indicated like this: CPU speed (external clock x multiplier factor)
Select the CPU speed according the type and the speed of your CPU.
Usually, you do not need to enter the clock and multiplier factor unless you try to use the "User Define" CPU speed.

Note 1For Intel Pentium CPUs, you can choose the following settings:

- 100 (66x1.5)
- 120 (60x2)
- 133 (66x2)
- 150 (60x2.5)
- 166 (66x2.5)
- 200 (66x3)

Note 2For AMD-K5 CPUs from AMD, you can choose the following P-Ratings:

- PR120 (60x1.5)
- PR133 (66x1.5)
- PR166 (66x1.75)

Note 3For Cyrix 6x86 and 6x86L CPUs, you can choose the following P-Ratings:

- PR120+ (50x2)
- PR133+ (55x2)
- PR150+ (60x2)
- PR166+ (66x2)

Note 4User define external clock and multiplier factor:

- User Define

  - ***External Clock:***
    - 50MHz
    - 55MHz
    - 60MHz
    - 66MHz
    - 75MHz
    - 83MHz
  - ***Multiplier Factor:***

    You can choose the following multiplier factors:
    - 1.5
    - 1.75
    - 2.0
    - 2.5
    - 3.0
    - 3.5

    However, differences will exist because of the various brands and types available.

Normally, **we do not recommend that you use the "User Define" option to setup CPU speed and multiplier factor,** especially for setup of future CPUs whose specifications are still unknown at the time of this publication. The specifications of all present CPUs are included in the default settings. Unless you are very familiar with all CPU parameters, it is very easy to make mistakes when you define by yourself the external clock and the multiplier factor. However, the BIOS will reset the CPU to a safe speed when you turn the power on second time after the main board fail to boot.

- ***Turbo Frequency:***

  This item will only be displayed if your CPU external clock supports Turbo mode.

  The Turbo mode allows you to speed up the external clock by approximately 2.5%. This feature is used to verify the design flexibility. It is a very important tool for test units to verify CPU stability. Do not use this feature for normal operation.

  - Disable: CPU external clock is operating within the normal limits.
  - Enable: CPU external clock is operating within the limits of the Turbo mode.

Solution in case of booting problem due to invalid clock setup:

Normally, if the CPU external clock setup is wrong, you will not be able to boot. In this case, turn the system off than on again. The CPU will automatically use its standard parameters to boot. You can then enter BIOS Setup again and set up the external clock.

When you change your CPU:

The PowerPro VX main board have been designed in such a way that you can turn the system on after having inserted the CPU in the socket without configuring any jumpers or DIP switches. But if you change your CPU, normally, you just need to turn off the power supply, change the CPU and then, set up the CPU parameters through CPU **SOFT MENU™**. However, if the CPU brand and type is the same, and if the new CPU is slower than the old one, we offer you three methods to successfully complete the CPU change operation.

Method 1: Setup up the CPU for the lowest speed for its brand. Turn the power supply off and change the CPU. Then turn the system on again, and set up the CPU parameters through CPU SOFT MENU.

Method 2: Try turning the system on a few times (3~4 times) and the system will automatically use its standard parameters to boot. You can then enter BIOS SETUP again and set up the new parameters.

Method 3: Since you have to open the computer case when you change the CPU, it could be a good idea to use the CCMOS jumper to erase the parameters of the original CPU and to enter BIOS Setup to set up CPU parameters again.

CPU Power Plane:

In the previous chapter we explained that the 586 CPUs can be divided into two types: single voltage and dual voltage. **The system BIOS will normally auto-detect the type of your CPU, and set the voltage accordingly, so you don't need to make any changes** unless you want to configure the CPU with custom setting. You may skip this section if your CPU is listed in the Soft MENU.

- Single Voltage: Single voltage CPU
- Dual Voltage: Dual voltage CPU
- Set up the voltage via CPU Marking

⊙ When the CPU is **single voltage,** the following options will be displayed to set up the voltage:

Plane voltage:

- 3.52v For Intel VRE standard CPUs and AMK-K5 or Cyrix 8x86 CPUs
- 3.38v For Intel STD and VR standards CPUs

⊙ When the CPU is **dual voltage**, two options will be displayed to set up Vcore and Vio plane voltage

Core Plane Voltage:

- 2.90v For AMD-K6/200 CPU.
- 2.80v For Intel Pentium MMX, Cyrix 6x86L and Cyrix 6x86MX CPU.
- 2.70v For future CPUs.
- 2.50v For future CPUs. (If hardware supports.)
- 3.20v For AMD-K6/233 and future CPUs. (If hardware supports.)

I/O Plane Voltage:

- 3.52v Reserved
- 3.38v Some CPUs from AMD need this I/O Plane Voltage.
- 3.30v For most of the dual voltage CPUs (default) currently available.

The CPU voltage must be set according to the manufacture's specification. The voltage information can be derived from the CPU Marking by the manufacturer. Since the voltage of future CPU will decrease as technology improves, we have reserved some options according to what we can forecast from present documentation. We cannot give you detailed information about the voltage required by each kind of CPU in this chapter. For the correct values, refer to appendices B, C and D.

⊙ Set up the CPU voltage:

If you think that to set up CPU by referring Appendices is too complicated, you may try to use the CPU Marking: within the options under "CPU Marking Is," set up the CPU by looking up the CPU Marking on the CPU.

Notes:

1. If your CPU is a dual voltage one and that the voltage set up is 3.52V, our main board features a hardware protection circuit that will lower the voltage between 2.8V and 2.9V, which is within the CPU operating voltage limits.
2. The voltage value given is the central value. For example, the voltage range of 3.52V is 3.45V to 3.6V. The central voltage value between 3.45V and 3.6V is 3.52V.

Attention: After setting up the parameters and you leave the BIOS SETUP, and you have verified that the system can be booted, do not press the Reset button or turn off the power supply. Doing so, the BIOS will not read the parameters

correctly, and you must re-enter CPU **SOFT MENU™** to set up the parameters all over again.

Chapter 3

□ STANDARD CMOS SETUP MENU

It is the basic configuration parameters of the BIOS. These parameters include the settings of date, hour, VGA card, FDD and HDD.

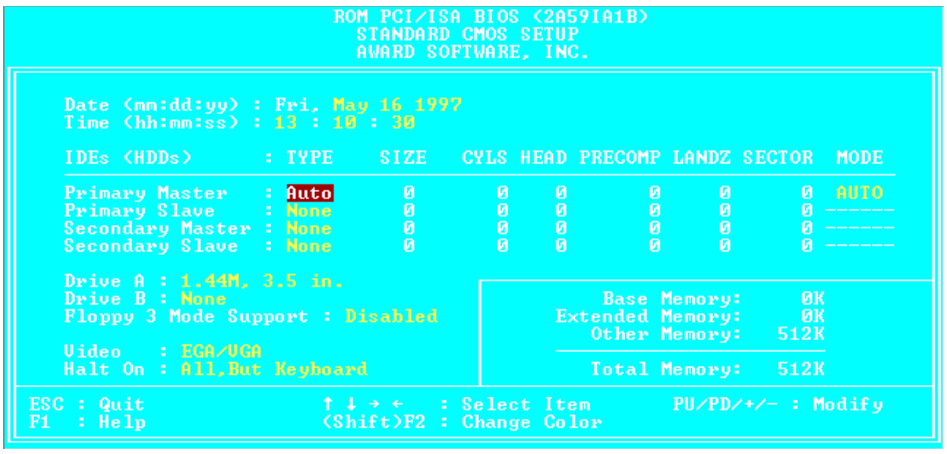


Fig 3-2 Standard CMOS Setup Menu

- *Set up of HDD operating mode:* NORMAL, LBA, LARGE

Since older DOS operating systems were only able to support IDE HDD whose capacity was not bigger than 528MB, any IDE hard disk with more than 528MB was unusable under DOS. AWARD BIOS features a solution to this problem: you can, according to your operating system, choose three operating modes: NORMAL, LBA or LARGE.

□ **Normal mode:**

Standard normal mode supports hard disks of 528MB or less under DOS. This mode directly uses positions indicated by Cylinders (CYLS), Heads, and Sectors to access data.

Certain Operating System may require you to setup your IDE Hard Disk in this mode.

- **LBA (Logical Block Addressing) mode:**

  LBA mode supports hard disk drives up to 8.4Giga. This mode uses a different method to calculate the position of disk data to be accessed. It translates Cylinders (CYLS), Heads and Sectors into a logical address where data are located. The Cylinders, Heads, and Sectors displayed in this menu do not reflect the actual structure of the hard disk, they are just reference values used to calculate actual positions. Currently, all high capacity hard disks support this mode, that's why we recommend you use this mode. The HDD AUTODETECTION option in the Main Menu will automatically detect the parameters of your hard disk and the mode supported.

- **LARGE Mode:**

  When the number of cylinders (CYLs) of the hard disk exceeds 1024 and DOS is not able to support it, or if your operating system does not support LBA mode, you should select this mode.

- FDD supporting 3 Mode:

  3 Mode floppy disk drives (FDD) are 3 1/2" drives used in Japanese computer systems. If you need to access data stored in this kind of floppy, you must select this mode, and of course you must have a 3 Mode floppy drive.

For further information about HDD installation, refer to Appendix E.

Chapter 3

BIOS FEATURES SETUP MENU

BIOS Features Setup Menu has already been set for maximum operation. If you do not really understand each of the options in this menu, we recommend you use default values.

In each item, you can press <F1> at any time to display all the options for this item.

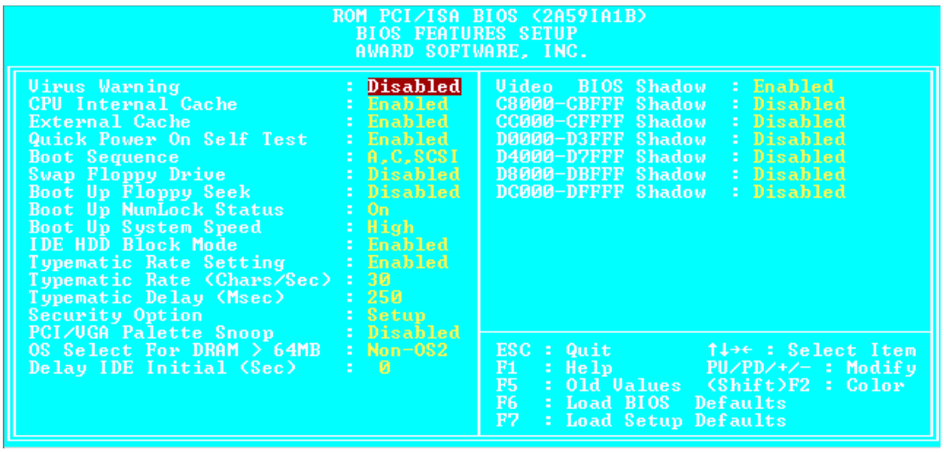


Fig 3-3 BIOS Features Setup

Virus Warning:

This item can be set as Enable or Disable.

When this feature is enabled, if there is any attempt from a software or an application to access the boot sector or the partition table, the BIOS will warn you that a boot virus is attempting to access to the hard disk.

CPU Internal Cache:

This item is used to Enable or to Disable the CPU internal cache. When the cache is set at Disable, it is much slower, so the default setting for this item is Enable. Some old and very bad programs will make the computer malfunction or crash if the system speed is to high. In that case, you should Disable this feature.

CPU External Cache:

This item is used to enable or to disable the CPU external cache. When the external cache is enabled, the system works faster. The default is Enable.

Quick power on self test:

After the computer has been powered on, the BIOS of the main board will run a series of tests in order to check the system and its peripherals. If the Quick power on self test feature is Enable, the BIOS will simplify the test procedures in order to speed up the boot process. The default is Enable.

Boot Sequence:

When the computer boots up, it can load the operating system from floppy drive A:, hard disk drive C:, SCSI disk drive or CD-ROM. There are many options for the boot sequence:

- A, C, SCSI
- C, A, SCSI
- C, CD-ROM, A
- CD-ROM, C, A
- D, A, SCSI (at least 2 IDE HDD can be used)
- E, A, SCSI (at least 3 IDE HDD can be used)
- F, A, SCSI (at least 4 IDE HDD can be used)
- SCSI, A, C
- SCSI, C, A
- A, SCSI, C

Swap Floppy Drive:

This item can be set as Enable or Disable.

When this feature is enabled, you don't need to open the computer case to swap the position of floppy disk drive connectors. Drive A: can be set as drive B:, and drive B: can be set as drive A:.

Boot Up Floppy Seek:

When computer boots up, the BIOS detects if the system has FDD or not. When this item is enabled, if the BIOS detects no floppy drive, it will display a floppy disk drive error message. If this item is disabled, the BIOS will skip this test.

Boot Up NumLock Status:

- On: At boot up, the Numeric Keypad is in numeric mode.
- Off: At boot up, the Numeric Keypad is in cursor control mode.

IDE HDD Block Mode:

This item can be set as Enable or Disable.

Most of new hard disk drives (IDE drives) support multi-sector transfers. This feature speeds up hard disk drive access performance and reduces the time necessary to access data. When this item is enabled, the BIOS will automatically detect if your hard disk drive supports this feature or not, and will choose the right settings for you.

For further details about hard disk drive installation, refer to appendix E.

Typematic Rate Setting:

This item allows you to adjust the keystroke repeat rate. When enabled, you can set the two keyboard typematic control that follow (Typematic Rate and Typematic Rate Delay). If this item is disabled, the BIOS will use the default setting.

Typematic Rate (Chars/Sec):

When you press a key continuously, the keyboard will repeat the keystroke according to the rate you have set. (Unit: characters/second

Typematic Rate Delay (Msec):

When you press a key continuously, if you exceed the delay you have set here, the keyboard will automatically repeat the keystroke according a certain rate. (Unit: milliseconds)

Security Option:

This option can be set to System or to Setup.

After you have created a password through PASSWORD SETTING, this option will deny access to your system (System) or modification of computer setup (BIOS Setup) by unauthorized users.

- SYSTEM: When you choose System, a password is required each time the computer boots up. If the correct password is not given, the system will not start.
- SETUP: When you choose Setup, a password is required only when accessing the BIOS Setup. If you have not set a password in the PASSWORD SETTING option, this option is not available.

Notice: Don't forget your password. If you forget the password, you will have to open the computer case and clear all information in the CMOS before you can start up the system. But doing this, you have to reset all the options you had set up before.

PCI /VGA Palette Snoop:

This option allows the BIOS to preview VGA Status, and to modify the information delivered from the Feature Connector of the VGA card to the MPEG Card. This option can solve the display inversion to black after you have used the MPEG card.

OS Select For DRAM > 64MB:

When the system memory is bigger than 64MB, the communication method between the BIOS and the operating system will differ from one operating system to another. If you use OS/2, select OS2; if you choose another operating system, select Non-OS2.

Video BIOS Shadow:

This option is used to define whether the BIOS on the video card uses shadow feature or not. You should set this option to Enable, otherwise the display performance of the system will greatly decrease.

Shadowing address ranges (C8000-CBFFF Shadow):

This option allows you to decide if the memory block (BIOS) of an interface card at the address C8000-CBFFF uses the shadow feature or not. If you have no interface card using this memory block, don't enable this option.

Shadowing address ranges (CC000-CFFFF Shadow):

This option allows you to decide if the memory block (BIOS) of an interface card at the address CC000-CFFFF uses the shadow feature or not. If you have no interface card using this memory block, don't enable this option.

Shadowing address ranges (D0000-D3FFF Shadow):

This option allows you to decide if the memory block (BIOS) of an interface card at the address D0000-D3FFF uses the shadow feature or not. If you have no interface card using this memory block, don't enable this option.

Shadowing address ranges (D4000-D7FFF Shadow):

This option allows you to decide if the memory block (BIOS) of an interface card at the address D4000-D7FFF uses the shadow feature or not. If you have no interface card using this memory block, don't enable this option.

Shadowing address ranges (D8000-DBFFF Shadow):

This option allows you to decide if the memory block (BIOS) of an interface card at the address D8000-DBFFF uses the shadow feature or not. If you have no interface card using this memory block, don't enable this option.

Shadowing address ranges (DC000-DFFFF Shadow):

This option allows you to decide if the memory block (BIOS) of an interface card at the address DC000-DFFFF uses the shadow feature or not. If you have no interface card using this memory block, don't enable this option.

SHADOW

The BIOS of standard video or other interface card is stored in ROM on the card, which is often much slower than RAM. The VGA display card usually use address B0000h to C7FFFh. With the Shadow feature, the CPU reads the BIOS on the VGA card and copies it into system RAM. When the CPU accesses the VGA BIOS for display, it reads through RAM instead of ROM. Video shadow is often enabled to speed up the display.

CHIPSET FEATURES SETUP MENU

The Chipset Features Setup Menu is used to modify the contents of the buffers in the chipset on the main board. Since the parameters of the buffers are closely related to hardware, if the setup is not correct or false, the main board will become unstable or you will not be able to boot up. If you don't know the hardware very well, use default values (use the LOAD SETUP DEFAULTS option).

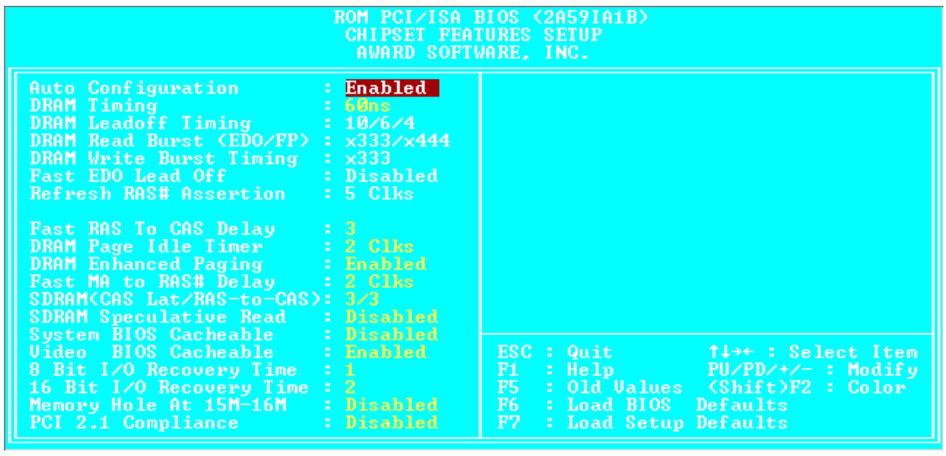


Fig 3-4 Chipset Features Setup

You can use the arrow keys to move between the items. Use "PgUP", "PgDn", "+" and "-" to change the values. When you have finished setting up the chipset, press "ESC" to go back to the main menu.

Auto Configuration:

This option allows (Enable) or prevents (Disable) the BIOS from using default values for Auto Configuration. The BIOS default is Enable.

- When you select Enable, the BIOS will automatically use the values related to DRAM. You will not be able to set up the following options.
- When you select Disable, you can manually set up DRAM options.

Attention: Unless you are very familiar with your computer and with the DRAM configuration and speed, we recommend you not change the DRAM options but enable this option.

DRAM settings:

The other DRAM settings are all closely related to hardware. If you do not understand this very well, don't make any changes. Our BIOS is able to autodetect the characteristics of your DRAM and to choose the best settings.

Memory Hole At 15M-16M:

This option is used to free up the 15M-16M memory block. Some special peripherals need to use a memory bloc located between 15M and 16M, and this memory block has a size of 1M. We recommend that you disable this option.

There are small differences in the chipset feature setup according to different main board models, but this has no influence upon performance. Our default setup should be the best one. That is the reason why we do not describe all the features of this menu.

□ POWER MANAGEMENT SETUP MENU

The difference between Green PCs and traditional computers is that Green PCs have a power management feature. With this feature, when the computer is powered on but inactive, the power consumption is reduced in order to save energy. When the computer operates normally, it is in Normal mode. In this mode, the Power Management Program will control the access to video, parallel ports, serial ports and drives, and the operating status of the keyboard, mouse and other device. These are referred to as Power Management Events. In cases where none of these events occur, the system enters the power saving mode. When one of the controlled events occurs, the system immediately returns to normal mode and operates at its maximum speed. Power saving modes can be divided into three modes according to their power consumption: Doze Mode, Standby Mode , and Suspend Mode. The four modes proceed in the following sequence:

Normal Mode===> Doze Mode===> Standby Mode===> Suspend Mode

The system consumption is reduced according the following sequence:
Normal > Doze > Standby > Suspend

1. In the Main Menu, select "Power Management Setup" and press "Enter". The following screen is displayed:

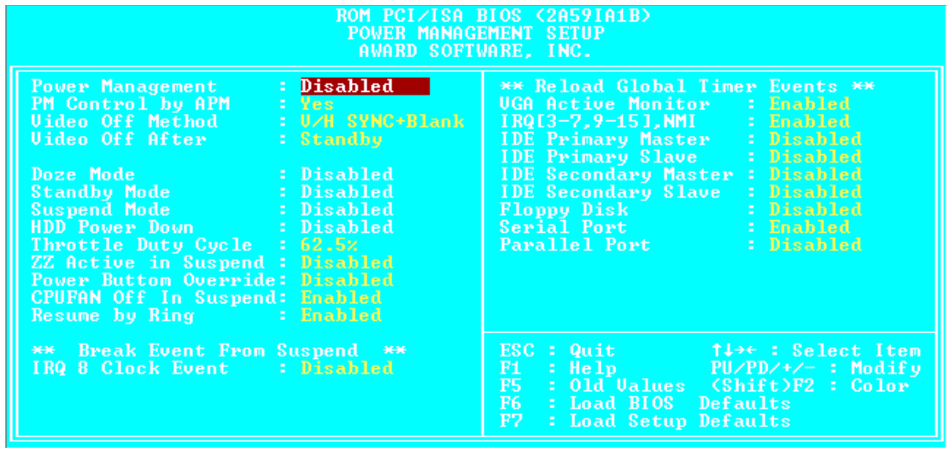


Fig 3-5 Power Management Setup Menu

2. Use arrow keys to go to the item you want to configure. To change the settings, use "PgUP", "PgDn", "+" and "-".
3. After you have configured the Power Management feature, press “Esc” to go back to the Main Menu.

We are now going to briefly explain the options in this menu:

Power Management:

Four options:

- User Define
  User Define defines the delay for accessing the power modes.
- Disable
  Disable Power Management features.
- Min Saving
  When the three saving modes are enabled, the system is set up for minimum power savings.
  Doze = 1 hour
  Standby = 1 hour
  Suspend = 1 hour
- Max Saving
  When the three saving modes are enabled, the system is set up for maximum power savings.
  Doze = 1 minute
  Standby = 1 minute
  Suspend = 1 minute

PM Control by APM:

Power Management is completely controlled by the APM.
APM stands for Advanced Power Mangement, it is a power management standard set by Microsoft, Intel and other major manufacturers.

Video Off Method:

Three video off methods are available: "Blank", "V/H SYNC+Blank" and "DPMS". The default is "V/H SYNC+Blank".
If this setting does not shut off the screen, select “Blank”. If your monitor and video card support DMPS standard, select “DPMS”.

Video Off After:

Select the saving mode in which the video is switched off.

- Always On
  The video will never be switched off in no saving mode.
- All Modes Off
  The video will be switched off in all saving modes.
- Standby
  The video will only be switched off in Standby or Suspend mode.
- Suspend
  The video will only be switched off in Suspend mode.

IDE HDD Power Down:

If the system has not accessed data on the hard disk drive during the specified time period, the engine of the HDD will stop in order to save electricity.
You can set 1 to 15 minutes or select Disable according to your use of the HDD.

Doze Mode:

When the setting selected for "Power Management" is "User Define", you can define for this mode any delay from 1 minute to 1 hour. If no power management event occurs during this time period, meaning that computer is inactive during this period, the system will enter the **Doze** power saving mode.
If this mode is disabled, the system will enter the next mode in the sequence (Standby or Suspend mode).

Standby Mode:

When the setting selected for "Power Management" is "User Define", you can define for this mode any delay from 1 minute to 1 hour. If no power management event occurs during this time period, meaning the computer is inactive during this period, the system will enter the **Standby** power saving mode.
If this mode is disabled, the system will enter the next mode in the sequence (Suspend mode).

Suspend Mode:

When the setting selected for "Power Management" is "User Define", you can define for this mode any delay from 1 minute to 1 hour. If no power management event occurs during this time period, meaning the computer is inactive during this period, the system will enter the **Suspend** power saving mode. The CPU stops working completely.

If this mode is disabled, the system will not enter the Suspend mode.

Throttle Duty Cycle:

This is used to specify the CPU speed in saving mode. Seven options are available: 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0% or 87.5%.

CPU Fan Off In Suspend:

CPU fan can be turn off in suspend mode.

Reload Global Timer Events

When one of the speficied occurs, the count down made for entry in power saving mode goes back to zero.

Since the computer will enter a power saving mode only after an inactivity delay specified (time speficied for Doze, Standby and Suspend modes) and after it has no activity, during this time period, any event will cause the computer to re-count the time elapsed. Resume events are operations or signals that cause the computer to resume time counting.

PCI & ONBOARD I/O SETUP

In this menu, you can change the PCI interrupt number (INTA, INTB,..) for the PCI device and hardware interrupts (IRQs) available for PCI interrupts (INT#). You can also change the onboard I/O device, I/O port address and other hardware settings.

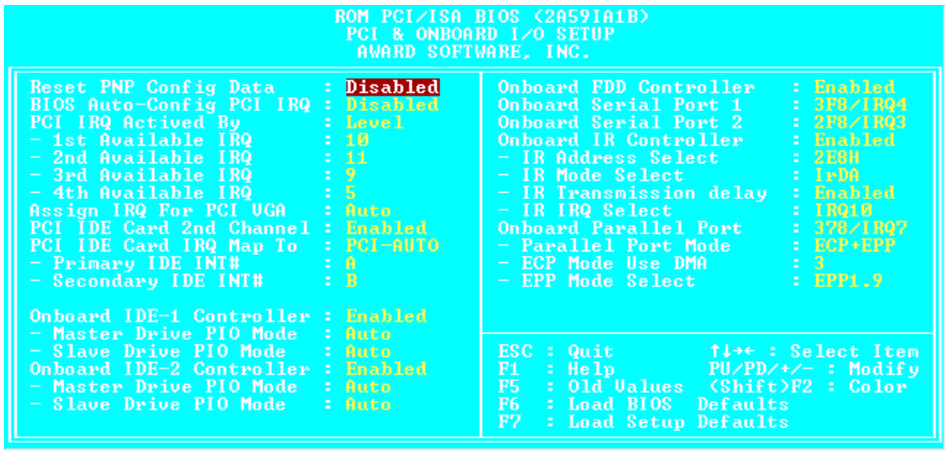


Fig 3-6 PCI & Onboard I/O Setup

Reset PnP Configuration Data:

If you want to clear ESCD data next time you boot up, and ask the BIOS to reset the settings for the Plug & Play ISA Card and the PCI Card, select Enabled. But the next time you boot up, this option will automatically be set as Disabled.

ESCD (Extended System Configuration Data)

The ESCD contains the IRQ, DMA, I/O Port, Memory information of the system. This is a specification and a feature specific to Plug & Play BIOS.

BIOS Auto-Config PCI IRQ:

This option enables or disables the BIOS capability to automatically assign IRQs. The BIOS default is Disable.

When you select Enable, the BIOS will automatically assign the IRQ to the PCI device in the PCI slots. When this option is disabled, you have to assign IRQs used by the interrupt number (INT#) of the PCI slots.

Xth Available IRQ:

You can select four IRQs out of the 10 listed (IRQ3, 4, 5, 7, 9, 10, 11, 12, 14, 15) to be assigned for use by the PCI device in the PCI slot.

1st Available IRQ:

This means that the first PCI device found on the PCI bus will use this IRQ. That is, this IRQ will be assigned to the PCI interrupt number (INT#) of the first PCI device found on the PCI bus.

2nd Available IRQ:

This IRQ will be assigned to the PCI interrupt (INT#) of the second PCI device found on the PCI bus.

The third and the fourth available IRQ will be assigned in sequence to PCI INT# of the third and the fourth PCI devices found on the PCI bus.

PCI IDE Card 2nd Channel:

This option can be enabled or disabled. BIOS default is Enable.
Since this channel uses IRQ15, if you want to use this channel, you have to enable this option to make the BIOS assign IRQ15 to this channel.

PCI IDE Card IRQ Map to:

Since the main board has two IDE controllers on board, you rarely want to use an add-on PCI IDE card. However, if you do, there are three options are available for the PCI IDE card IRQ settings: PCI Auto, PCI-slotX and ISA.

- PCI-Auto: The onboard BIOS auto-detects which PCI slot has an IDE card inserted in.
- PCI-slotX: Some old PCI IDE cards cannot be detected by the BIOS. If the onboard BIOS cannot detect a PCE IDE card, you have to specify on which PCI slot the IDE card is inserted, to make the BIOS assign IRQ14 for use by the interrupt number (INT#) of this PCI slot.
- ISA: If you select ISA, it means that your PCI IDE card features a “paddleboard” and a cable that can be connected to IRQ on the ISA slot, because the BIOS will not assign any IRQ to this PCI slot.

Attention: Primary Channel and Secondary Channel : The BIOS needs two independent interrupt number (INT#) lines to be allocated to the PCI IDE card. Be careful not to choose the same INT# twice.

On Board FDD Controller:

This is to Enable or Disable the Onboard FDD Controller.

On board Serial Port 1:

This is used to specify the I/O address and IRQ of Serial Port 1. Five options are available: Disable, 3F8h/IRQ4, 2F8h/IRQ3, 3E8h/IRQ4 or 2E8h/IRQ3.

On board Serial Port 2:

This is used to specify the I/O address and IRQ of Serial Port 2. Five options are available: Disable, 3F8h/IRQ4, 2F8h/IRQ3, 3E8h/IRQ4 or 2E8h/IRQ3.

On board parallel Port:

Set the I/O address and IRQ of the onboard parallel port. Four options are available: Disable, 3BCh/IRQ7, 278h/IRQ5 and 378h/IRQ7. Default is 378h/IRQ7.

Parallel Port Mode:

Can be set as EPP v.1.7, EPP v. 1.9, ECP, ECP+EPP 1.7, ECP+EPP 1.9 or Normal (SPP) mode. Default is Normal (SPP) mode.

ECP Mode Use DMA:

When the mode selected for the onboard parallel port is ECP, the DMA channel selected can be Channel 1 or Channel 3.

On board IDE-1 Controller:

Onboard PCI IDE 1 controller can be set as Enable or Disable.

Master drive PIO Mode:

- Auto: the BIOS can auto-detect the PIO mode of the HDD in order to set its data transfer rate. (Default)
- Mode 0~Mode 4: User can specify the PIO mode of the HDD in order to set its data transfer rate.

Slave drive PIO Mode:

- Auto: the BIOS can auto-detect the PIO mode of the HDD in order to set its data transfer rate. (Default)
- Mode 0~Mode 4: User can specify the PIO mode of the HDD in order to set its data transfer rate.

On board IDE-2 Controller:

The onboard IDE-2 controller can be set at Enable of Disable.

Master drive PIO Mode:

- Auto: the BIOS can auto-detect the PIO mode of the HDD installed in order to set its data transfer rate. (Default)
- Mode 0~Mode 4: User can specify the PIO mode of the HDD in order to set its data transfer rate.

Slave drive PIO Mode:

- Auto: the BIOS can auto-detect the PIO mode of the HDD installed in order to set its data transfer rate. (Default)
- Mode 0~Mode 4: User can specify the PIO mode of the HDD in order to set its data transfer rate.

Note:

MODE 0~4 reflects the HDD data transfer rate. The higher the MODE value is, the better is the HDD data transfer rate. But it does not mean that you can select the highest MODE value just as you like, you first have to be sure that your HDD supports this MODE, otherwise the hard disk will not be able to operate normally.

For further information about HDD installation, refer to Appendix E.

LOAD BIOS DEFAULTS

BIOS defaults are the reference settings that allow your system to work at a comparatively low performance. When you choose the option, the following message is displayed:

"Load BIOS Defaults (Y/N)? N"

If you want to use BIOS default values, press "Y", than <Enter>.

LOAD SETUP DEFAULTS

Setup defaults are the settings that allow your system to operate at its highest performance. When you choose this option, the following message is displayed:

"Load Setup Defaults (Y/N)? N"

If you want to use BIOS Setup default values, press "Y", than <Enter> to complete the loading of the settings for best performance.

You should first load the best settings, than enter the CPU Soft Menu to set up CPU parameters, otherwise the BIOS will replace set parameters by default parameters.

PASSWORD SETTING

This option allows you to set a password required to start the system (System) or to access to the BIOS (Setup).

After you have set a password through the PASSWORD SETTING option, you can enter the Security Option in the "BIOS Features Setup Menu" to select the security level in order to prevent any unauthorized access.

Password setting procedure:

When you choose the Password setting option, the following message is displayed:

"**Enter Password:**"

Type your password. When complete, press <Enter>. The following message is displayed:

"Confirm Password:"

Type your password again. When complete, press <Enter>. The password setting is completed.

Password clearing procedure:

When you select the Password setting option, the following message is displayed:

"Enter Password:"

Press <Enter>, the message "Password Disable" is displayed. Press a key. The password clearing procedure is completed.

Notice: Do not forget your password. If you forget it, you will have to open the computer case, clear the contents of the CMOS, and boot the system up again. But doing this, you must reset all your settings.

IDE HDD AUTO DETECTION

After you have installed the hard disk, in old systems, you had to know the hard disk specifications, such as the number of cylinders, heads and sectors, and to enter the relevant information into the hard disk information section. If the CMOS data were erased, and you had forgotten the hard disk specifications, it was a great problem. But now, you can use this option to autodetect the hard disk type and specifications, and the BIOS will automatically detect all the relevant information and place them in the Hard Disk data section of the Standard CMOS Setup Menu, in order to allow you to use your hard disk.

Appendix A Quick Installation

Appendix A will ***give you a simplified installation procedure,*** in order to allow you to install tour main board quickly and correctly.

If you need further information or if you need to change some other settings, read from Chapters 1.

Installing the CPU: Lift up the lever of the CPU socket, insert your CPU on the socket, and lower the lever back in position. Notice the CPU socket is specially keyed, so the CPU can be inserted to the socket only if it is aligned correctly with the socket.

Adjusting CPU voltage and speed: According to your CPU voltage and speed, set up the CPU in the CPU **SOFT MENU™** of the BIOS SETUP. For information about your CPU, refer to appendices B, C or D, and to information labeled on the CPU itself.

Installing DRAM: Inserting your DRAM modules into the DIMM 1 ~ 4.

Installing FDD: **FDC-** Connect one end of the 34-pin cable that comes with the drive to the FDD connector, and the other end of the cable to the FDC pin connector on the main board.
Note: Be sure that the red line on the cable connects to the first pin of the connectors.

Installing HDD: **IDE1-** Connect one end of the 40-pin cable that comes with the drive to the HDD connector, and the other end to IDE1 pin connector on the main board.
Note: Be sure that the red line on the cable connects to the first pin of the connectors.

Installing CD-ROM Drive: **IDE2-** Connect one end of the 40-pin cable that comes with the drive to the CD-ROM connector, and the other end to the IDE2 pin connector on the main board.
Note: Be sure that the red line on the cable connects to the first pin of the connectors.

Installing parallel device: **LPT-** There is a 25-pin D-shaped female connector on the main board standard two-level ATX interface panel. Connect your external parallel devices and apply power to them only after you have finished the system assembly.

Installing serial device: **COM1 and COM2 -** There are two 9-pin D-shaped (DB-9) male connectors with ribbon cable and 10-pin headers to be connected with CN3 and CN4 on the main board. Connect your external serial devices to DB-9 connector. If your serial device has a 25-pin connector, a 9 to 25 pin converter is required.

Installing Keylock connector: **PN1 -** There is a specific orientation for pin 1 to pin 5. Insert the five-threads Keylock and Power LED cable into correct pins of connector on the main board.

Appendix A

Pin number	Name or significance of signal
1	+5VDC [for power LED]
2	No connection[no wire]
3	Ground[for power LED]
4	Keyboard inhibit Signal
5	Ground

Installing HDD LED connector:

PN1 - There is a specific orientation for this connector. Connect the two-thread IDE LED connector to the pin 7 and 8. If the HDD LED does not light up while the IDE drive is being accessed, you may reverse the connector and try again.

Pin number	Name of the signal or signification
7	HDD LED signal LED Anode
8	HDD LED signal LED Cathode

Installing speaker connector:

PN1 - Connect the four-threads speaker cable to the PN1 pin 9 to pin 12.

Pin number	Description	Pin number	Description
9	+5VDC	11	Ground
10	Ground	12	Sound Signal

Installing AT Power input connector:

J1 - This connector is for AT power supply connector. **Unplug the power core to power supply before you connect the power supply to the main board.**

Pin number	Description	Pin number	Description
1	Power Good Signal	7	Ground
2	+5V	8	Ground
3	+12V	9	-5V
4	-12V	10	+5V
5	Ground	11	+5V
6	Ground	12	+5V

Installing Keyboard

Keyboard - There is an orientation pin. Match the connector for keyboard to connector on the main board.

Installing PS2 Mouse:

Mouse : There is a PS/2 mouse mini din connector with 5-thread connector for the main board PS/2 mouse port. There is an orientation pin on the Mini Din connector. Match the PS/2 Mouse connector to the Mini Din connector connected with main board.

Adjusting Other Jumpers:

Some jumpers are reserved for diagnostic functions and they must be set in normal position.

Adjust them according to the following recommendations. Make sure the JP3 (Clear CMOS) jumper is on pin 1 and pin 2 for normal operation.

BIOS Setup: Setup CPU and other Parameters.

After you have followed the steps described above and completed the installation, when you power the computer on, you will see the following message:

TO ENTER SETUP BEFORE BOOT PRESS CTRL-ALT-ESC OR DEL KEY

Press “Del” key immediately to enter BIOS Setup. Select Load Setup Defaults, than enter CPU Soft Menu to set CPU parameters.

Appendix B Intel Pentium CPUs

Pentium 75MHz

CPU Spec.	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
				Vcore	VIO			
Q0649	75MHz	1.5	50MHz	STD		STD	Yes	
Sx753	75MHz	1.5	50MHz	STD		STD	Yes	
SX961	75MHz	1.5	50MHz	STD		STD	Yes	
SX969	75MHz	1.5	50MHz	STD		STD	Yes	
Q0700/S	75MHz	1.5	50MHz	STD		STD	Yes	
Q0749/S	75MHz	1.5	50MHz	STD		MD	Yes	
Q0837	75MHz	1.5	50MHz	STD		STD	Yes	
SY005	75MHz	1.5	50MHz	STD		STD	Yes	
Q0540	75MHz	1.5	50MHz	STD		STD	Yes	
Q0541	75MHz	1.5	50MHz	STD		STD	Yes	
Q0666	75MHz	1.5	50MHz	STD		STD	Yes	
SX961	75MHz	1.5	50MHz	STD		STD	Yes	
SZ977	75MHz	1.5	50MHz	STD		STD	Yes	
Q0700	75MHz	1.5	50MHz	STD		STD	Yes	
Q0749	75MHz	1.5	50MHz	STD		MD	Yes	
SX998	75MHz	1.5	50MHz	STD		MD	Yes	
SZ994	75MHz	1.5	50MHz	STD		MD	Yes	
SU070	75MHz	1.5	50MHz	STD		MD	Yes	
Q0689	75MHz	1.5	50MHz	2.9V	3.3V		Yes	
SK091	75MHz	1.5	50MHz	2.9V	3.3V		Yes	
Q0851	75MHz	1.5	50MHz	2.9V	3.3V		Yes	
SK122	75MHz	1.5	50MHz	2.9V	3.3V		Yes	
SU097	75MHz	1.5	50MHz	STD		STD	Yes	
SU098	75MHz	1.5	50MHz	STD		STD	Yes	

Appendix B

Pentium 90MHz

	CPU Speed	CPU Spec	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
						Vcore	VIO			
P54C		Sx653	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Sx957	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0654	90MHz	1.5	60MHz	VR		STD	Yes	
P54C		Sx958	90MHz	1.5	60MHz	VR		STD	Yes	
P54C	90 MHz	Q0655	90MHz	1.5	60MHz	STD		MD	Yes	
P54C		Sx959	90MHz	1.5	60MHz	STD		MD	Yes	
P54C		Q0699/S	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Sx968	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Sx969	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0783	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Sy006	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0542	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0613	90MHz	1.5	60MHz	VR		STD	Yes	
P54C		Q0543	90MHz	1.5	60MHz	STD		DP	Yes	
P54C		Sx879	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Sx885	90MHz	1.5	60MHz	STD		MD	Yes	
P54C		Sx909	90MHz	1.5	60MHz	VR		STD	Yes	
P54C		Q0628	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0611	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0612	90MHz	1.5	60MHz	VR		STD	Yes	
P54C		Sx923	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Sx922	90MHz	1.5	60MHz	VR		STD	Yes	
P54C		Sx921	90MHz	1.5	60MHz	STD		MD	Yes	
P54C		Sz951	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0653	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0654	90MHz	1.5	60MHz	VR		STD	Yes	
P54C		Sz978	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0699	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Sz995	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		SU031	90MHz	1.5	60MHz	STD		STD	Yes	
P54C		Q0695	90MHz	1.5	60MHz	2.9V	3.3V		Yes	

Pentium 100MHz

	CPU Speed	CPU Spec	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
						Vcore	VIO			
P54C	100 MHz	Sx886	100MHz	1.5	66MHz	STD		MD	No	
P54C		Sx910	100MHz	1.5	66MHz	VR		MD	No	
P54C		Sx956	100MHz	1.5	66MHz	STD		STD	No	
P54C		Sx960	100MHz	1.5	66MHz	VRE		MD	No	
P54C		Q0657	100MHz	1.5	66MHz	VR		MD	No	
P54C		Q0658	100MHz	1.5	66MHz	VRE		MD	Yes	
P54C		Sx962	100MHz	1.5	66MHz	VRE		MD	Yes	
P54C		Q0698/S	100MHz	1.5	66MHz	VRE		MD	Yes	
P54C		Q0697/S	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		Sx963	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		Sx970	100MHz	1.5	66MHz	VRE		MD	Yes	
P54C		Q0784	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		SY007	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		Q0563	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		Q0587	100MHz	1.5	66MHz	VR		STD	Yes	
P54C		Q0614	100MHz	1.5	66MHz	VR		STD	Yes	
P54C		Q0677	100MHz	1.5	66MHz	VRE		MD	Yes	
P54C		Q0656	100MHz	1.5	66MHz	STD		MD	Yes	
P54C		Q0698	100MHz	1.5	66MHz	VRE		MD	Yes	
P54C		Q0697	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		SZ996	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		SU032	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		Q0853	100MHz	1.5	66MHz	2.9V	3.3V	MD	Yes	
P54C		SK124	100MHz	1.5	66MHz	2.9V	3.3V	MD	Yes	
P54C		SY046	100MHz	1.5	66MHz				Yes	
P54C		Q0784	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		SU110	100MHz	1.5	66MHz	STD		STD	Yes	
P54C		SU099	100MHz	1.5	66MHz	STD		STD	Yes	

Appendix B

Pentium120MHz

	CPU Speed	CPU Spec.	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
						Vcore	VIO			
P54CQS		Q0708	120MHz	2	60MHz	STD		STD	Yes	
P54CQS	120 MHz	Q0711	120MHz	2	60MHz	VRE		MD	Yes	Convert to P54C
P54CQS		Q0730	120MHz	2	60MHz	STD		MD	Yes	
P54CQS		Sk084	120MHz	2	60MHz	STD		MD	Yes	
P54CQS		Sk086	120MHz	2	60MHz	VRE		MD	Yes	Convert to P54C
P54C		Sx994	120MHz	2	60MHz	VRE		MD	No	
P54C		Q0732/S	120MHz	2	60MHz	VRE		MD	No	
P54C		Q0785	120MHz	2	60MHz	VRE		STD	No	
P54C		SY008	120MHz	2	60MHz	VRE		STD	No	
P54C		SY033	120MHz	2	60MHz	STD		STD	No	
P54C		Q0707	120MHz	2	60MHz	VRE		STD	No	
P54C		Q0732	120MHz	2	60MHz	VRE		MD	No	
P54C		SU033	120MHz	2	60MHz	VRE		MD	No	
P54C		Q0776	120MHz	2	60MHz	STD			Yes	
P54C		SK110	120MHz	2	60MHz	STD			Yes	
P54C		Q0808	120MHz	2	60MHz	STD			Yes	
P54C		SX999	120MHz	2	60MHz	STD			Yes	
P54C		SY030	120MHz	2	60MHz	STD			Yes	
P54C		SU100	120MHz	2	60MHz	STD		STD	No	
P54CS		Q031	120MHz	2	60MHz	STD		KIT	Yes	
P54CS		SY062	120MHz	2	60MHz	STD		KIT	Yes	

Pentium 133MHz

	CPU Speed	CPU Spec	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
						Vcore	VIO			
P54CS		Q0772	133MHz	2	66MHz	STD		STD	Yes	
P54CS		Q0773	133MHz	2	66MHz	STD		Kit	Yes	
P54CS		Q0774	133MHz	2	66MHz	VRE		MD	Yes	
P54CS		Q0877	133MHz	2	66MHz	VRE		STD	Yes	
P54CS		Sk106	133MHz	2	66MHz	STD		STD	Yes	
P54CS		S106J	133MHz	2	66MHz	STD			Yes	
P54CS		Sk107	133MHz	2	66MHz	STD			Yes	
P54CS		Q0843	133MHz	2	66MHz	STD			Yes	
P54CS		SY022	133MHz	2	66MHz	STD			Yes	
P54CS		Q0844	133MHz	2	66MHz	STD			Yes	
P54CS		SY023	133MHz	2	66MHz	STD			Yes	
P54CS	133 MHz	SU038	133MHz	2	66MHz	STD			Yes	
P54CS		SU073	133MHz	2	66MHz	STD			Yes	
P54CS		Q0882	133MHz	2	66MHz				Yes	
P54CS		SY082	133MHz	2	66MHz				Yes	
P54CQS		Q0733	133MHz	2	66MHz	STD		MD	Yes	Convert to P54CS
P54CQS		Sk098	133MHz	2	66MHz	STD		MD	Yes	Convert to P54CS
P54CQS		Q0751	133MHz	2	66MHz	STD		MD	Yes	
P54CQS		Q0775	133MHz	2	66MHz	VRE		MD	Yes	Convert to P54CS

Appendix B

Pentium 150MHz

	CPU Speed	CPU Spec	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
						Vcore	VIO			
P54CS		Q0835	150MHz	2.5	60MHz	STD		STD	Yes	
P54CS		SY015	150MHz	2.5	60MHz	STD		STD	Yes	
P54CS		Q0878	150MHz	2.5	60MHz	STD		STD	Yes	PPGA
P54CS		SU071	150MHz	2.5	60MHz	STD		STD	Yes	
P55C	150 MHz	Q0939	150MHz	2.5	60MHz	2.9V	3.3V			CPGA
P55C		Q0941	150MHz	2.5	60MHz	2.9V	3.3V			PPGA
P55C		Q974	150MHz	2.5	60MHz	2.8V	3.3V			CPGA
P55C		Q977	150MHz	2.5	60MHz	2.8V	3.3V			PPGA

Pentium 166MHz

	CPU Speed	CPU Spec	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
						Vcore	VIO			
P54CS		SY016	166MHz	2.5	66MHz	VRE			Yes	
P54CS		Q0841	166MHz	2.5	66MHz	VRE			Yes	
P54CS		SY017	166MHz	2.5	66MHz	VRE			Yes	
P54CS		Q0949	166MHz	2.5	66MHz	VRE		Kit	No	PPGA up
P54CS		SY037	166MHz	2.5	66MHz	VRE			No	PPGA up
P54CS	166MHz	Q0951F	166MHz	2.5	66MHz	VRE		Kit	Yes	PPGA
P54CS		SY044	166MHz	2.5	66MHz	VRE		Kit	Yes	PPGA
P54CS		Q0836	166MHz	2.5	66MHz	VRE			Yes	
P54CS		Q0886	166MHz	2.5	66MHz	VRE			Yes	PPGA
P54CS		Q0890	166MHz	2.5	66MHz	VRE			Yes	PPGA
P54CS		SY072	166MHz	2.5	66MHz	VRE			Yes	
P55C		Q0940	166MHz	2.5	66MHz	2.9V	3.3V			CPGA
P55C		Q0942	166MHz	2.5	66MHz	2.9V	3.3V			PPGA
P55C		Q975	166MHz	2.5	66MHz	2.8V	3.3V			CPGA
P55C		Q978	166MHz	2.5	66MHz	2.8V	3.3V			PPGA
P55C		Q019	166MHz	2.5	66MHz	2.8V	3.3V			PPGA

Pentium 200MHz

	CPU Speed	CPU Spec	Internal Clock	Bus Factor	External Clock	Power		CPU Timing	DP Supp.	Note
						Vcore	VIO			
P54CS	200 MHz	Q0951	200MHz	3	66MHz	VRE			No	PPGA up
P54CS		SY045	200MHz	3	66MHz	VRE		Kit	No	PPGA up
P54CS		Q0951F	200MHz	3	66MHz	VRE		Kit	Yes	PPGA
P54CS		SY044	200MHz	3	66MHz	VRE			Yes	PPGA
P55C		Q018	200MHz	3	66MHz	2.8V	3.3V			PPGA

✡ Bus Factor

Power	**STD**	3.15V~3.465V (Recommended voltage is 3.38V)
	VR	3.300V~3.465V (Recommended voltage is 3.38V)
	VRE	3.450V~3.6V (Recommended voltage is 3.52V)
Timing	**STD**	Standard Timing
	MD	Min. Delay (denoting shorter minimum valid delay AC timing for some signal)
	Kit	Supports timing for C55/C88 cache chip set & design

P54C

1. Beginning with the P54C E-Step, standard timings have been replaced by existing Min Delay timing.

P54CS

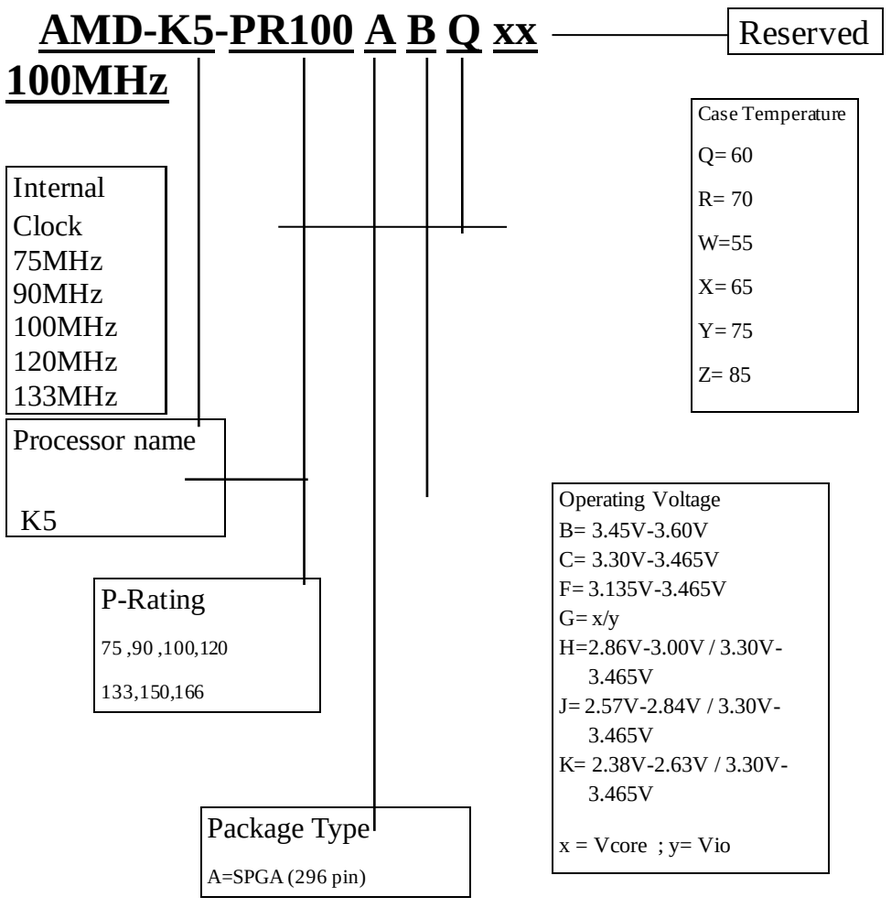
1. P54CS PPGA UP: No DP, No APIC, No FRC
2. Beginning with the P54C E-Step, standard timings have been replaced by existing Min Delay timing.

P55C

1. P55C A-Step is NOT production stepping
2. A-1 step: Vcc and timing on initial samples is 2.9V +/- 0.1V
3. A-2 Step and B step: Vcc and timing on production stepping is 2.8V +/- 0.1V

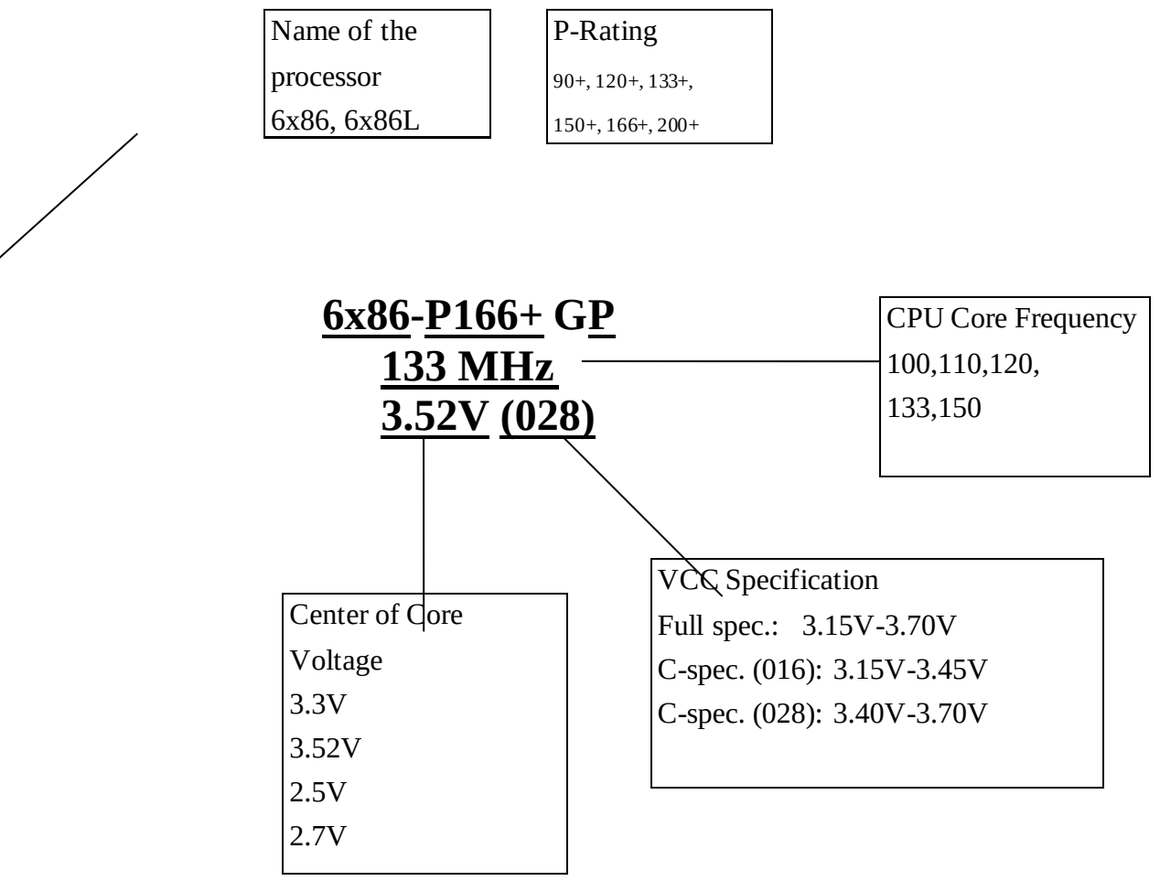
Appendix C AMD-K5 CPUs

Recognizing AMD CPU speed, voltage and package:



Appendix D Cyrix 6x86 CPUs

Recognizing Cyrix CPU speed and voltage:



Appendix E HDD Installation

Most of the present Hard Disk Drives (HDD) use IDE interface. Installing an IDE hard disk is much easier than other type of hard drives. There are usually no software driver to get it work for most operating system.

The data stored in the hard disk are accessed through a chipset located on the main board. You probably often hear about the PIO mode, Master mode or DMA mode of HDD. These modes reflect the way data is transferred from and to the IDE drive and the main board.

What is the PIO mode? When the system needs to access hard disk data, the CPU delivers input/output (I/O) orders through the chipset on the main board to the hard disk drive, and than puts these data into the system memory.

What is the DMA mode? Usually, DMA mode refers to accessing the hard disk data by the chip set, it does not refers to data transfer mode.

What is the Master mode? When the system needs to access hard disk data, these data are directly accessed from the hard disk by the chipset on the main board (using a DMA or a PIO mode), and then the data is put into the memory. In this case, the CPU does not participate in the data transfer. The Master mode can reduce the CPU load, especially in a Multi-task environment, and improve your system performance.

Here are some examples of data transfer rates for IDE HDD with PIO interface:

PIO Mode 0 The fastest data transfer rate reaches 3.3Mbyte/sec
PIO Mode 1 The fastest data transfer rate reaches 5.2Mbyte/sec
PIO Mode 2 The fastest data transfer rate reaches 8.3Mbyte/sec
PIO Mode 3 The fastest data transfer rate reaches 11.1Mbyte/sec
PIO Mode 4 The fastest data transfer rate reaches 16.6Mbyte/sec

The higher the MODE value is, the best is the hard disk data transfer rate. But this does not mean that you can select the highest mode value as you like. You must be sure that your hard disk supports that type of fast data transfer, otherwise your hard disk will not be able to operate correctly.

Here are some examples of data transfer rates for IDE HDD with DMA mode:

DMA Mode 0 The fastest data transfer rate reaches 4.16Mbyte/sec
DMA Mode 1 The fastest data transfer rate reaches 13.3Mbyte/sec
DMA Mode 2 The fastest data transfer rate reaches 16.6Mbyte/sec

Appendix E

Installing a IDE Hard Disk or CD-ROM Drive:

In the **Standard CMOS Setup Menu**,

- Primary means the first IDE channel or port on the main board, that is, connector IDE1 on our main board.
- Secondary means the second IDE channel or port on the main board, that is, connector IDE2 on our main board.
- Two IDE devices can be connected to the each IDE channel:
  One must be set to Single or Master. The other must be Slave.

IDE devices are connected through 40-pin ribbon cable. There are three connectors on the cable. One end must be connected to the Main Board, the other two can connect up to two IDE devices. The red line on the ribbon cable must be lined up with pin 1 on the connectors. You must setup each IDE device with proper jumpers unless you use special cable to select the Mater or Slave. The bootable IDE Hard Drive is usually set to Master. Please refer to the hard disk drive manual for the jumper setting.

Installing one HDD :

Be sure that your hard disk drive is set at Master. Actually, most hard disk drives are set at Master as a default, so you don't need to adjust any setting. Just connect one end of the 40 pin cable on the drive connector, and the other end to connector IDE1 on the main board.

Installing one HDD + one CD-ROM drive:

Method 1: Set the HDD at Master, and the CD-ROM drive at Slave.
Connect one connector of the 40-pin cable to the hard disk, another one to the CD-ROM drive, and the other end to connector IDE1 on the main board.

Method 2: Set the HDD as Master and connect one end of the 40-pin cable to the HDD, and the other end to connector IDE1 on the main board.
You can ignore the setting of the CD-ROM drive, just connect one end of the 40-pin cable to the CD-ROM drive, and the other end to connector IDE2 on the main board.
We recommend you use this kind of connection, which has no influence on HDD speed.

Installing two HDDs

Method 1: Set the hard disk drive used for boot up at Master, and the other drive at Slave. Connect one of the connectors of the 40-pin cable to the first drive, another connector to the second drive, and the other end of the cable to connector IDE1 on the main board.

Method 2: Set the hard disk drive used for boot up at Master, connect one end of the 40-pin cable to the drive, and the other end to connector IDE1 on the main board.
Set the other hard disk drive at Master, connect one end of the 40-pin cable to the drive, and the other end to connector IDE2 on the main board.

Installing two HDDs + one CD-ROM drive:

Method 1: Set the IDE hard drive used for boot up to Master, set the other HDD to Slave, and connect one connector at the end of the 40-pin ribbon cable to the first drive, the middle connector to the second drive, and the other end of the cable to connector IDE1 on the main board.
You can ignore the setting of the CD-ROM drive. Connect one end of the 40-pin cable to the drive, and the other end to the connector IDE2 on the main board.
This method is recommended.

Method 2: Set the hard disk drive used for boot up to Master, connect one end of the 40-pin cable to the drive, and the other end to connector IDE1 on the main board.
Set the other hard disk drive to Master, and the CD-ROM drive to Slave. After you have verified the Master/Slave settings, connect one connector at the end of the 40-pin cable to the HDD, the middle connector to the CD-ROM drive, and the other end of the cable to connector IDE2 on the main board.

Installing three HDDs:

Method 1: Set the hard disk drive used for boot up to Master, set the second drive to Slave. Connect one connector of the 40-pin cable to the first drive, another connector to the second drive, and the other end of the cable to connector IDE1 on the main board.
Set the third drive to Master, and connect one end of the 40-pin cable to the drive, and the other end to connector IDE2 on the main board.

Method 2: Set the hard disk drive used for boot up at Master, and connect one end of the 40-pin cable to the drive and the other end to connector IDE1 on the main board. Set the second drive to Master and the third drive to Slave, connect one connector of the 40-pin cable to the second drive, another connector to the third drive, and the other end of the cable to connector IDE2 on the main board.

Installing three HDDs + one CD-ROM drive:

Set the hard disk drive used for boot up at Master, set another HDD (the second) at Slave, connect one connector of the 40-pin cable to the first drive, another connector to the second drive, and the other end of the cable to connector IDE1 on the main board.
Set the third hard disk drive at Master, set the CD-ROM drive at Slave, connect one connector of the 40-pin cable to the third HDD, another connector to the CD-ROM drive, and the other end of the cable to connector IDE2 on the main board.

BIOS Setup:

- If all your HDDs are new, you can use the **IDE HDD Auto Detection** option in the CMOS to autodetect the parameters of all your drives. You don't need to set any hard disk parameter**.**

- If one or several of your HDD are old, and if you don't want to erase the data stored in your drives, you will have to manually enter the parameters (Type, Cylinders, Heads, Sectors, Mode) of the drive(s) you don't want to erase. After you have used the **IDE HDD Auto Detection** option in the CMOS, enter the **Standard CMOS Setup Menu** to change the settings of the related hard disk drive**.**

Software use:

The basic step in using a hard disk drive is to make a **HDD Low Level Format**, than run FDISK, and than FORMAT the drive. Most of present HDD have already been subjected to low level format at the factory, so you probably can skip this operation.

Boot with a bootable floppy disk, then enter **FDISK.**

Using FDISK: (DOS command)

This command is found in the DOS disks.

FDISK is a tool used to organize and to partition the hard disk. The hard disk must have been partitioned before use. You can create one unique partition on the hard disk, or create several partition and use a different Operating System on each partition. Just don't forget that you have to specify an Active partition, otherwise your hard disk will not be bootable. For further information about FDISK, refer to the FDISK section in the DOS user's manual.

After you have partitioned the hard disk with FDISK, the system will reboot automatically. Boot from a system floppy disk, and type **FORMAT C:/S**

Using FORMAT: (DOS command)

This command is found in the DOS disks.

FORMAT is used to format the hard disk. The HDD have to be formatted before use. Don't forget to add **/S** after C:, otherwise the hard disk will not be bootable after formatting.

Appendix F Technical Support

When you have a problem during operation...

In order to help our technical support personnel to quickly find out what is the problem of your main board and to give you the answers you need, before filling in the technical support form, eliminate any peripheral that is not related to the problem, and indicate on the form the key peripherals. Fax this form to your dealer or to the company where you bought the hardware in order to benefit from our technical support. (You can refer to the examples given below.)

Boot up problem

Example 1: With a system including: Main Board (with CPU and memory), HDD, CD-ROM, FDD, VGA CARD, MPEG CARD, SCSI CARD, SOUND CARD..., after the system is assembled, if you cannot boot up, check the key components of the system using the procedure described below.

First remove all interface cards except the VGA card and try to reboot.

- If the system still do not boot up:
  Try installing another brand/model VGA card and see if the system will start. If it still does not start, check the power supply and try another couple of times. If still does not boot, write down the VGA card model, main board model, BIOS identification number, CPU on the technical support form (refer to main instructions), and contact your vendor.
- If the system do boot up:
  Insert the interface cards you have removed previously back into the system one by one and try to start the system each time you insert a card, until the system doesn't start anymore. Keep the VGA card and the last add-on card that caused the problem and remove all other cards or peripherals, and start again. If the system still does not boot, you may have a hardware conflict. Write down the information related to both cards in the add-on Card space provided, and don't forget to indicate the main board model, version, BIOS identification number, CPU (refer to main instructions), and give a description of the problem. Contact the hardware vendor for help.

Appendix F

System boots, but reset itself

Example 2: With a system including the Main Board (with CPU and memory) HDD, CD-ROM, FDD, VGA CARD, LAN CARD, MPEG CARD, SCSI CARD, SOUND CARD, after assembly and after having installed the Sound Card Driver, when you restart the system, when it runs the Sound Card Driver, it resets automatically. This problem may be due to the Sound Card Driver or other memory resident programs (including virus). First get a bootable floppy disk and try to clean boot. If it boot up normally, try to edit the CONFIG.SYS and AUTOEXEC.BAT file for DOS. With a text editor, add a remark REM in the front of the line that loads the driver, and reboot. Using this trial and error method, you will eliminated most software errors.

🕮 Technical Support Form

Company name: ☎ Phone #:

☺ Contact: Fax #:

Model	*	BIOS ID #	*
Main board model no.		DRIVER VERSION	
OS/Application	*		
Hardware name	Brand	Specifications	
C.P.U	*		
HDD **Error! Bookmark not defined.** IDE1			
CD-ROM Drive **Error! Bookmark not defined.** IDE1			
System Memory (DRAM)			
ADD-ON CARD			

✍

Problem Description: _____

_____

_____

Instructions...

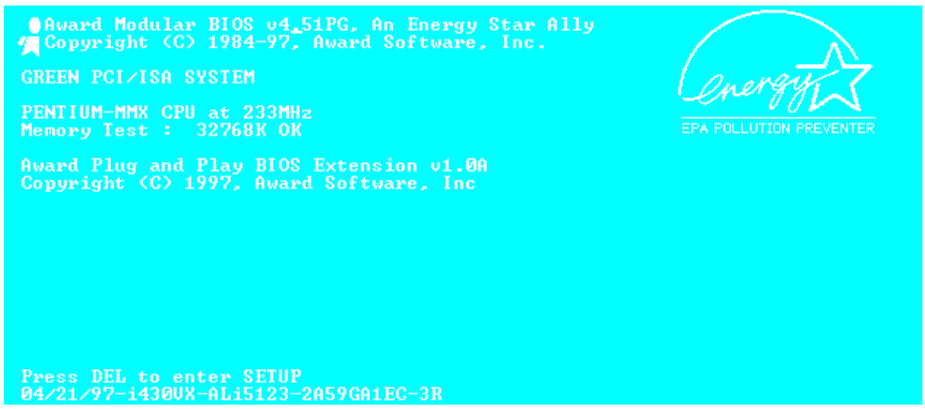
To fill in this "Technical Support Form", refer to the step-by-step instructions given below:

***1. MODEL:** Note the model number given in your user's manual.
Example: PowerPro VX

***2. Main board PCB revision number (if any):** Note the main board model number labeled on the main board.
Example:

***3.BIOS ID# :** When the PC is first powered up, you will see a screen similar to this:

Appendix F



"3R" is the BIOS ID number.

"2A59GA1EC" is the BIOS part number

4. DRIVER VERSION: Note the driver version number indicated on the DEVICE DRIVER disk or contained in the DISK.ID or README.TXT file.

Example:  IDE Device Driver

***5. OS/APPLICATION:** Indicate which operating system and applications your are using.
Example: MS-DOS 6.22, Windows 3.1....

***6. CPU:** Indicate the brand and the speed (MHz or P-rating) of your CPU.
Example: (A) In the "Brand" column, write "Intel", in the "Specifications" column, write "200MHz"
(B) In the "Brand" column, write "Cyrix", in the "Specifications" column, write "P166+"

7. HDD: Indicate the brand and specifications of your HDD(s), specify if the HDD is using IDE channel 1 (☐IDE1) or channel 2 (☐IDE2) and the HDD is set as Master or Slave. We will consider that your HDD is "☑IDE1" Master if not marked.
Example: In the "HDD" column, check the box, in the Brand space, write "Seagate", in the Specifications space, write "ST31621A (1.6GB)".

8. CD-ROM Drive: Indicate the brand and specifications of your CD-ROM drive, specify if it uses ☐ IDE1 or ☐IDE2 and circle M for Master or S for Slave. In case you give no indication, we will consider that your CD-ROM is a Master IDE device on IDE channel 2.
Example: In the "CD-ROM drive" space, check the box, in the Brand space, write "Mitsumi", in the Specifications space, write "FX-400D".

9. System Memory (DRAM): Indicate the brand and specifications of your system memory.

Examples:

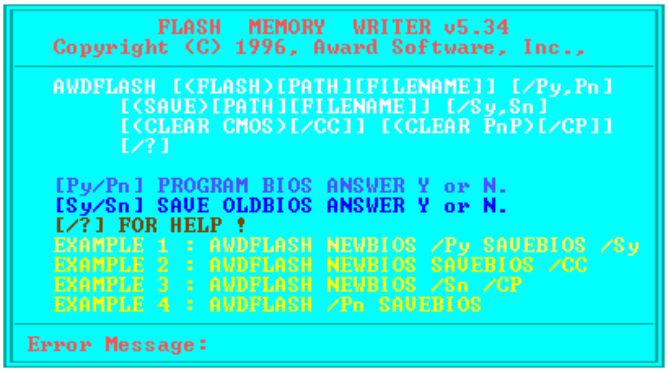
In the Brand space, write "SEC", in the Specifications space, write "DIMM-S DRAM 8MB-G12".

10. ADD-ON CARD: Indicate which add-on cards you are "absolutely sure" are related to the problem. Try to remove the add-on card from the system to see if the problem still exist.

If you cannot identify the problem origin, indicate all the add-on cards inserted into your system.

Note: Items between the "*" are absolutely necessary.

Appendix G Flash BIOS Upgrade



Example 1 To upgrade the system BIOS and create a backup of the current system BIOS, execute this command:
AWDFLASH NEWBIOS /Py SAVEBIOS /Sy

Example 2 To update BIOS, create a backup of current system BIOS, and clear the CMOS, execute this command:
AWDFLASH NEWBIOS SAVEBIOS /CC

Example 3 To update BIOS and clear PnP settings execute this command:
AWDFLASH NEWBIOS /Sn /CP

Example 4 To make a backup of the current system BIOS execute the following command:
AWDFLASH NEWBIOS /Pn SAVEBIOS

Notes: "NEWBIOS" indicates file name for the new BIOS which can be downloaded from BBS (408) 263-8529 or website at http://www.jaton.com (user can choose a different file name in place of NEWBIOS).

"SAVEBIOS" indicates the filename of the old system BIOS (user can choose a different file name in place of SAVEBIOS).

Explanation of parameter names:

/CC: Clears CMOS data
/CP: Clears PnP data

Appendix G

Important Note:

- When executing AWDFLASH.EXE, do not run HIMEM.SYS and EMM386.EXE in the CONFIG.SYS.

- Please take the following actions to solve problems caused by power shortage or other unpredictable malfunctions during BIOS update that lead to update failure. First, it is strongly suggested that you format a disk that can boot your computer before you update your BIOS. If the above mentioned problem occurs during BIOS update you will be able to use this disk to automatically execute a BIOS update. The content of the disk should be the following:

  a. Startup system files (COMMAND.COM, MSDOS.SYS, IO.SYS...)

  b. AWDFLSH.EXE

  c. The NEWBIOS file which can be downloaded from Jaton's BBS or website.

  d. AUTOEXEC.BAT, which has the following content:
  A:\AWDFLASH NEWBIOS /Py /Sn

When a version of BIOS that is for the incorrect main board model the following message will appear:

"The program file's part number does not match with your system!"

LIMITED WARRANTY:

This product is warranted against defects in materials and workmanship for a period of two years from the date of purchase from authorized agent. During the warranty period, product determined by us to be defective in form or function will be repaired or at our option, replaced at no charge. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or as result of service or modification other than by us.

This warranty is in lieu of any other warranty expressed or implied. In no event shall we be held liable for incidental or consequential damages arising from the purchase of this product.