486-PIO-3
MAIN BOARD
MANUAL

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486-PIO-3

MAIN BOARD
User's Guide

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HANDLING PRECAUTIONS

Static electricity may cause damage to the integrated circuits on the mainboard. Before handling any mainboard outside of its protective packaging, ensure that there is no static electric charge in your body.
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Observe any or all of these basic precautions when handling the mainboard or other computer components:

- Wear a static wrist strap which fits around your wrist and is connected to a natural earth ground.
- Touch a grounded or anti-static surface or a metal fixture such as a water pipe.
- Avoid contact with the components on add-on cards, boards and modules and with the "**gold finger**" connectors plugged into the expansion slot. It is best to handle system components by their mounting bracket.

Above methods either prevent static build-up or cause it to be discharged properly.

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486-PIO-3

ABOUT THIS MANUAL

This manual is designed to guide you and facilitate your use of the 486-PIO-3 mainboard. It contains a description of the design and features of the mainboard, and also includes useful information for changing the configuration of the board and the system it is installed in. The manual is divided into four chapters, which contain the main body of information normally referred to by users.

Chapter 1 gives an overview of the mainboard and describes its major components and features.

Chapter 2 gives information on the jumper settings on the mainboard.

Chapter 3 provides information on the memory subsystem of the mainboard in the form of SIMMs and Cache memory and describes how you can upgrade memory.

Chapter 4 briefly explains the mainboard's BIOS system setup in general and tells you how to run it and change the system configuration settings.

NOTE : The material in this manual is for information only and is subject to change without notice. We reserve the right to make changes in the product design without reservation and without notification to its users. We shall not be liable for technical or editorial omissions made herein; nor for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

Overview

The 486-PIO-3 mainboard combines the advanced capabilities of the VIA Pluto™ chipset with a high-performance PCI local bus architecture to provide the ideal platform for unleashing the unsurpassed speed and power of the Intel 486DX2/DX4™ processors.

This highly-flexible mainboard is designed to run a full range of 486DX/DX2/DX4 processors and can be easily upgraded using its 237-pin ZIF (Zero Insertion Force) socket. The processor's advanced performance is complemented by a second level write back cache of up to 1MB and a main memory of up to 64MB RAM. The main memory is installed using the board's two 72-pin SIMM sockets that accept standard Fast Page Mode DRAM.

The 486-PIO-3 integrates a full set of I/O features onboard, including two serial ports, one EPP/ECP capable serial port, and one Floppy Disk Drive controller. It also comes with a built in Enhanced IDE controller that provides convenient, high-speed connections with up to four IDE devices, including Hard Disk and CD-ROM drives.

The mainboard allows a variety of processor types of different voltages. Winbond's W83787F/787IF/877F™ support advanced I/O features, such as ECP/EPP Protocol, allows for a better system performance.

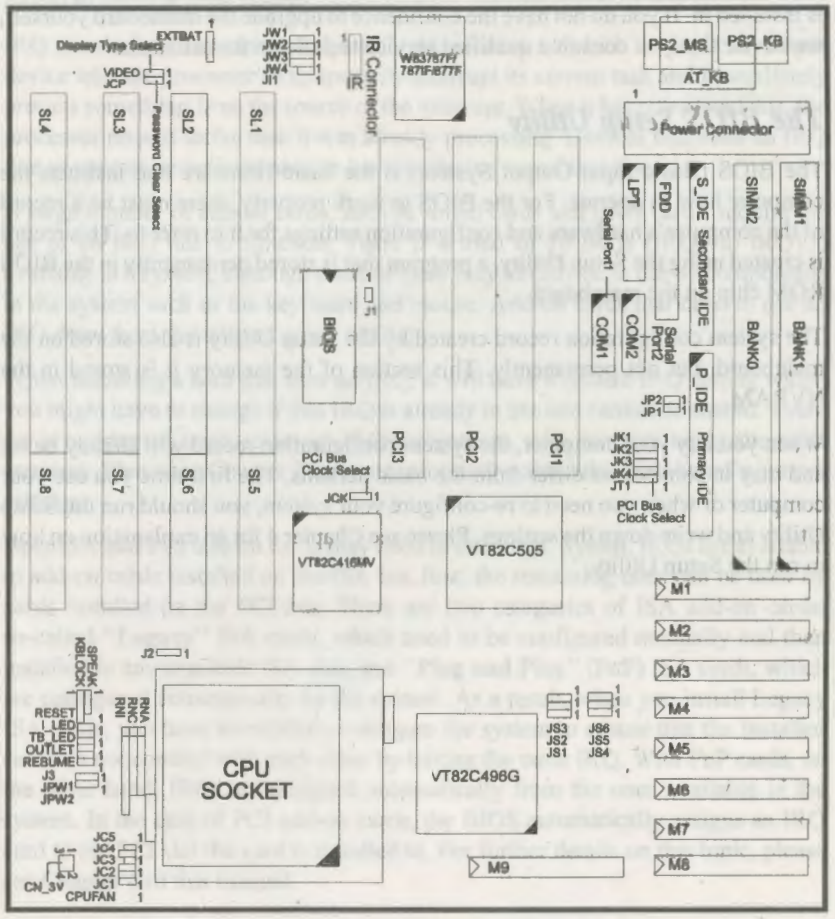
This chapter gives a you a brief overview of the 486-PIO-3 mainboard. In addition to basic information on the board's main components and features, it also provides advice on how to upgrade and expand it.

Main Features

The 486-PIO-3 mainboard comes with the following features:

- Supports:
  Intel 80486SX/DX/DX2/DX4/ SL-Enhanced;
  AMD A80486DX2/DX4™, Am486DX2/DX4/X5™; Cyrix Cx486DX™;
  UMC U5SLV™ in a ZIF socket.
- VIA Pluto chipset, including a CPU interface controller, advanced cache controller, integrated DRAM controller, synchronous ISA bus controller, PCI local bus interface, integrated power management unit.
- Supports 128KB/256KB/512KB/1MB direct-mapped write-back/write-through cache memory.
- Supports 1 up to 64MB RAM in two banks using 72-pin SIMMs; provides standard page mode DRAM operation.
- Shadowing of system and video BIOS to speed up access.
- Award BIOS.
- Supports 128KB Flash ROM.
- Built-in VIA VT82C416MV™ provides internal keyboard controller, real-time clock and clock generator.
- Onboard Winbond W83787F/787IF/877F™ I/O chipset supports two serial ports, one parallel port, FDC, Infrared, and PnP interface.

Mainboard Layout



NOTE : When plugging your CPU into the CPU (ZIF) socket, make sure that the pin 1 matches that of the CPU socket.

About Your Mainboard

This section provides useful information that you will need to know should you decide to modify or upgrade the configuration of the mainboard and the system it is installed in. If you do not have the confidence to upgrade the mainboard yourself, we advise that you consult a qualified service technician for assistance.

The BIOS Setup Utility

The BIOS (Basic Input Output System) is the basic firmware that instructs the computer how to operate. For the BIOS to work properly, there must be a record of the computer's hardware and configuration settings for it to refer to. This record is created using the Setup Utility, a program that is stored permanently in the BIOS ROM chip on the mainboard.

The system configuration record created by the Setup Utility is also stored on the mainboard, but not permanently. This section of the memory it is stored in the NVRAM.

When you buy your computer, the system configuration record will already be set and may in some cases differ from the basic defaults. The first time you use your computer or when you need to re-configure your system, you should run the Setup Utility and write down the settings. Please see Chapter 4 for an explanation on how to run the Setup Utility.

IRQ Functionality

As you read through this manual, you will see the term "**IRQ**" on a number of occasions. It is important for you to know what this term means, particularly if you intend to upgrade your system.

IRQ stands for "**Interrupt Request**", the process in which an input or output device tells the processor to temporarily interrupt its current task and immediately process something from the source of the interrupt. When it has completed this, the processor returns to the task it was already processing. Devices that need an IRQ line to operate sometimes need to have exclusive use of that line.

A large number of add-on cards, such as sound cards and LAN cards, require the use of an IRQ line to function. There is a total of 16 IRQs (IRQ0 to IRQ15) available in a system, although some of them may already be in use by components in the system such as the keyboard and mouse. Add-on cards that need to use an IRQ draw from the unused group of IRQs.

When installing a card that uses an IRQ, it will have a default IRQ setting which you might have to change if that IRQ is already in use and cannot be shared. There are a number of ways to set an IRQ assignment, with jumpers being the most common. Please see Chapter 2 for more information about this mainboard's jumper settings.

Both ISA and PCI add-on cards may need to use IRQs. System IRQs are available to add-on cards installed on the ISA bus first; the remaining ones can be used by cards installed on the PCI bus. There are two categories of ISA add-on cards: so-called "**Legacy**" ISA cards, which need to be configured manually and then installed in any available ISA slot; and "**Plug and Play**" (PnP) ISA cards, which are configured automatically by the system. As a result, when you install Legacy ISA cards, you have to carefully configure the system to ensure that the installed cards do not conflict with each other by having the same IRQ. With PnP cards, on the other hand, IRQs are assigned automatically from the ones available in the system. In the case of PCI add-on cards, the BIOS automatically assigns an IRQ card to the PCI slot the card is installed in. For further details on this topic, please see Chapter 4 of this manual.

DMA Channels of ISA Cards

Some Legacy and PnP ISA add-on cards may also need to use a Directed Memory Access (DMA) channel. DMA assignments for this mainboard are handled in the same way as the IRQ assignment process outlined above. For more information, please refer to Chapter 4 of this manual.

Enhanced IDE

This mainboard features an integrated Enhanced IDE controller that provides convenient, high-speed connections with up to four IDE devices, such as Hard Disk, CD-ROM and Tape Backup Drives. Enhanced IDE is an upgrade of the original IDE specification and provides increased capabilities and performance in a number of areas, including support for Hard Disk Drives of over 528MB and faster data transfer rates of up to 16.6MB per second utilizing the PIO Mode 4 timing scheme.

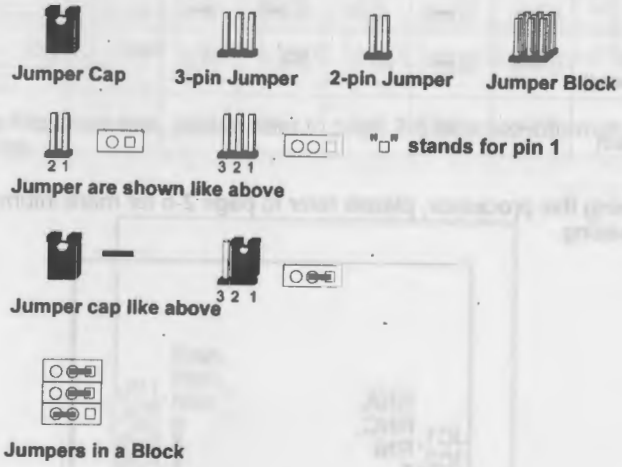
With the integrated IDE controller you can connect up to four IDE peripheral devices to your system. All devices are categorized in the same way that IDE Hard Disks were configured in the past, with one device set as the "**Master**" device and the other as the "**Slave**" device. We recommend that Hard Disk Drives use the primary IDE connector and that CD-ROM drives utilize the secondary IDE connector for improved system performance.

Mainboard Settings

The 486-PIO-3 has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

Jumpers

Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. To "**set**" a jumper, a black cap containing metal contacts is placed over the jumper pin/s according to the required configuration. A jumper is said to be "**shorted**" when the black cap has been placed on one or two of its pins. The types of jumpers used in this manual are shown below:



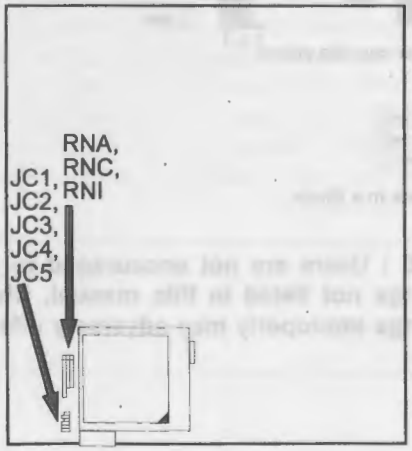
→ **NOTE : Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.**

CPU Jumper Settings: JC1, JC2, JC3, JC4, JC5, RNA, RNC, RNI

Intel :
486SX/DX/DX2; DX4 ODP; P24S; P24D; P24T;
IntelDX4 -
(Double-Speed: A80486DX4-XX*,
Triple-Speed: A80486DX4-XX*)

	JC1	JC2	JC3	JC4	JC5	RNA	RNC	RNI
486SX						1	1	1
486DX/DX2 P24S								
DX4 ODP P24D								
P24T								
DX4 (Double-Speed)								
DX4 (Triple-Speed)								

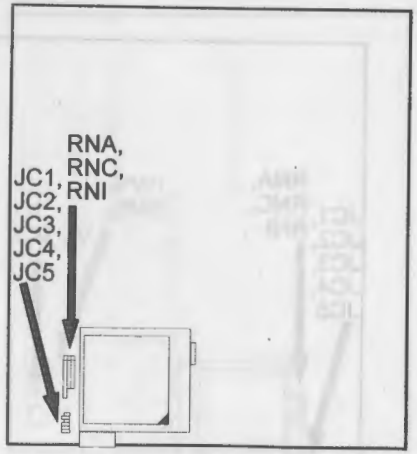
* When using this processor, please refer to page 2-5 for more information about jumper setting.



AMD :
486DX2 -
(A80486DX2-XXV8T*, A80486DX2-XXNV8T*);
486DX4 -
(A80486DX4-100NV8T*, A80486DX4-XXSV8B*,
Am486DX4-100V8T*);
AMD-X5*

	JC1	JC2	JC3	JC4	JC5	RNA	RNC	RNI
486DX2						1	1	1
Enhanced 486DX2								
486DX4								
Enhanced 486DX4								
AMD-X5								

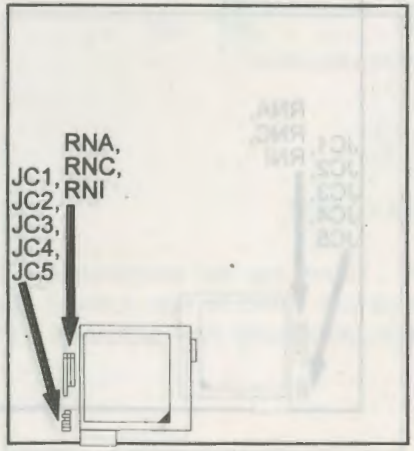
* When using this processor, please refer to page 2-5 for more information about jumper setting.



UMC : U5S/U5SD/U5SLV -
(U5SX-SUPERXX, U5SD-SUPERXX, U5SLV-SUPERXX*);
Cyrix :Cx486DX/DX2/DX4 -
(Cx486DX-XXGP, Cx486DX-VXXGP*,
Cx486DX2-XXGP, Cx486DX2-VXXGP*, Cx486DX4-100*);
5x86 -
(5x86-100*, 5x86-120*)
TI : (TI486DX2-G66-GA*, TI486DX2-G80-GA*,
TI486DX4-G100-GA*)

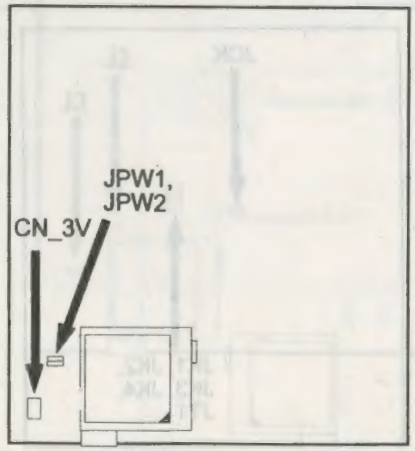
	JC1	JC2	JC3	JC4	JC5	RNA	RNC	RNI
U5SD						1 0 8P4R	1	1
U5S U5SLV						0 8P4R		
Cx486DX/DX2 TI486DX2/DX4							0 8P4R	
Cx486DX4 5x86								0 8P4R

* When using this processor, please refer to page 2-5 for more information about jumper setting.



Low-Voltage CPU Jumper Setting

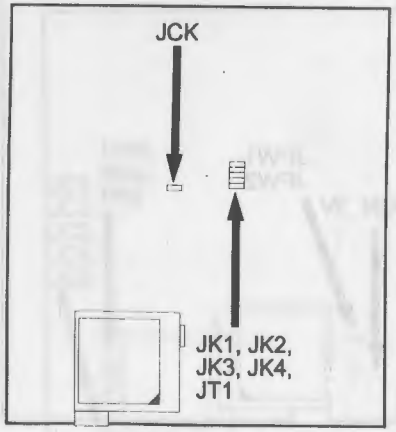
CPU Voltage Type	Jumper Setting	CPU Model
3.3V	*JPW1* *JPW2*	*UMC -* U5SLV-SUPERXX *AMD -* AMD-X5
3.45V	*JPW1* *JPW2*	*AMD -* A80486DX4-100NV8T A80486DX2-XXSV8B A80486DX2-XXNV8T Am486DX2-XXV8T A80486DX4-XXSV8B Am486DX4-100V8T *INTEL* A80486DX4-75 A80486DX4-100 *Cyrix* *5x86-100* *5x86-120* *TI* *TI486DX2-G66-GA* *TI486DX4-G100-GA* *TI486DX2-G80-GA*
3.6V	*JPW1* *JPW2*	*Cyrix -* Cx486DX-VXXGP
4.0V	*JPW1* *JPW2*	*Cyrix -* Cx486DX2-V80GP
CN_3V	1 2 3 4	For 3.3V, 3.45V, 3.6V and 4.0V CPUs
	1 2 3 4	For 5V CPUs (Default)



CPU Clock Jumper Setting

	50 MHz DX-50	*40 MHz* DX-40 DX2-80	*33.3 MHz (Default)* SX-33 DX-33 DX2-66 DX4-100 X5-133	*25 MHz* SX-25 DX-25 SX2-50 DX2-50 DX4-75
JK1				
JK2				
JK3				
JK4				

JT1, JCK	
	PCI Bus Clock Select
	(When the processor clock is less than or equal to 33 MHz.) PCI Bus Clock = Processor Clock (Default)
	(When the processor clock is greater than 33 MHz.) PCI Bus Clock = Processor Clock / 2



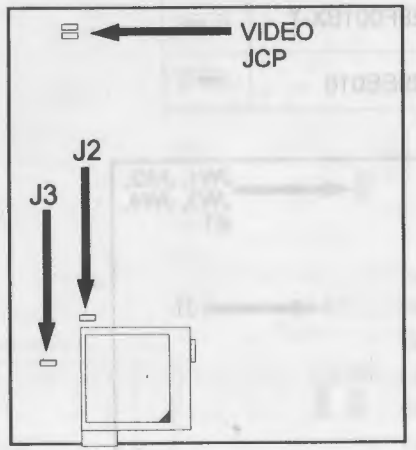
Password Clear: JCP
Display Type Select: VIDEO
KB_LOCK Mode Select: J2
TB_LED Mode Select: J3

Password Clear	JCP
Enabled	
Disabled (Defalut)	

KB_LOCK Mode	J2
IOCHCK	
KB_.LOCK (Default)	

Display Type	VIDEO
Mono/EGA/VGA (Default)	
CGA	

TB_LED Mode	J3
G_LED	
TB_LED (Default)	



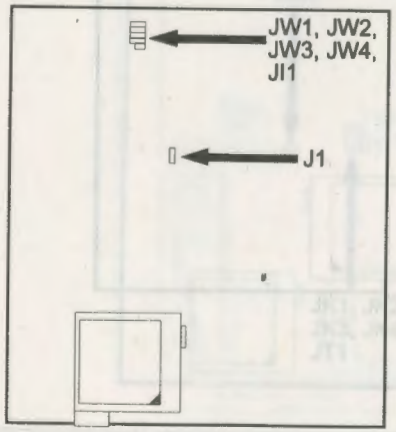
W83787F/787IF Controller: JW1, JW2, JW3, JW4, JI1, J1

W83787IF/877F	JW1	JW2
COM2		
Infrared		

ECP Mode	JW3	JW4
DMA 1 (Default)		
DMA 3		

Printer Port Direction	JI1
OUTPUT	
Bidirection (Default)	

Programmable Flash EPROM Type	J1
Intel 28F001BX-T	
SST 29EE010	

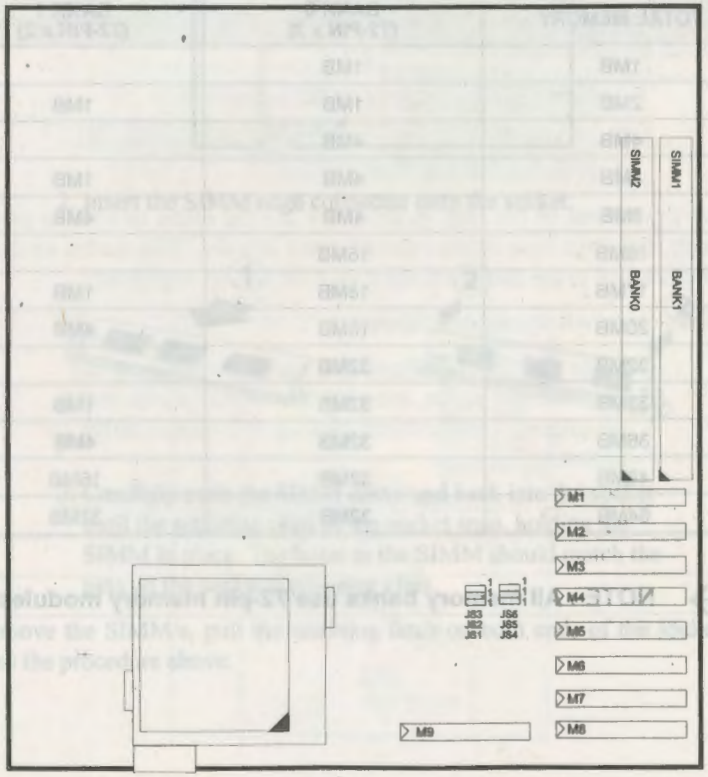


System Memory

The 486-PIO-3 can be equipped with the necessary memory for running all your applications. Memory comes in the form of DRAM (SIMMs) and cache SRAM. This chapter describes these two types of memory and gives instructions on how to install each type on the mainboard.

Memory Locations

The board layout below shows the locations of the DRAM memory banks and the cache SRAM:



Installing DRAM

SIMM Banks

The 486-PIO-3 can accommodate onboard memory from 1 to 64MB using SIMMs (Single-In-Line Memory Modules, one SIMM shown below.) The mainboard has two memory banks — Bank 0 and Bank 1. Each bank has two SIMM sockets which can accept either a 1, 4, 16 or 32MB SIMM in each socket.

DRAM Configuration

Memory may be installed as suggested in the following table. It does not matter to start the installation from Bank 0 or Bank 1.

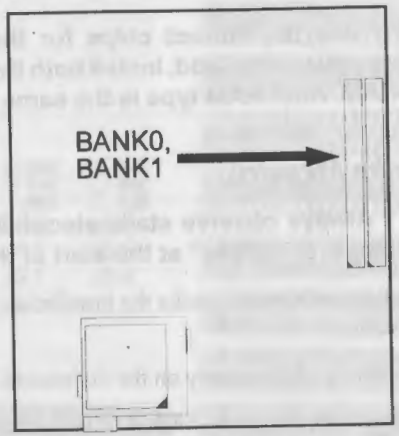
TOTAL MEMORY	BANK 0 (72-PIN x 2)	BANK 1 (72-PIN x 2)
1MB	1MB	
2MB	1MB	1MB
4MB	4MB	
5MB	4MB	1MB
8MB	4MB	4MB
16MB	16MB	
17MB	16MB	1MB
20MB	16MB	4MB
32MB	32MB	
33MB	32MB	1MB
36MB	32MB	4MB
48MB	32MB	16MB
64MB	32MB	32MB

→ **NOTE : All memory banks use 72-pin memory modules.**

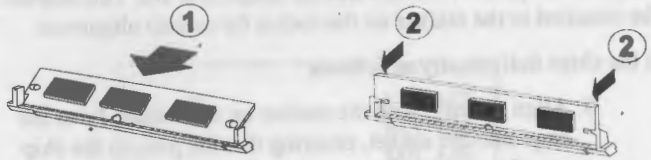
Installation Instructions

→ **NOTE : Always observe static electricity precautions. See "Handling Precautions" at the start of this manual.**

1. Locate the SIMM banks on the mainboard.



2. Insert the SIMM edge connector onto the socket.



3. Carefully push the SIMM down and back into the socket until the retaining clips of the socket snap, holding the SIMM in place. The holes in the SIMM should match the pins on the socket's retaining clips.

To remove the SIMM/s, pull the retaining latch on both ends of the socket and reverse the procedure above.

Cache Memory

The 486-PIO-3 can accept cache SRAM of 128K/256K/512K/1MB in DIP packages. Every time the CPU wants to write data to the external memory, if the location in SRAM is a "**hit**", it writes this data to the cache RAM directly, not to the DRAM.

→ **NOTE : Use the correct chips for the amount of cache memory you want to add. Install both the correct Cache and Tag SRAM. Alter RAM type is the same as Tag RAM.**

Installing Cache Memory

→ **NOTE : Always observe static electricity precautions. See "Handling Precautions" at the start of this manual.**

If you do not have the confidence to make the installation, better consult a service technician for assistance.

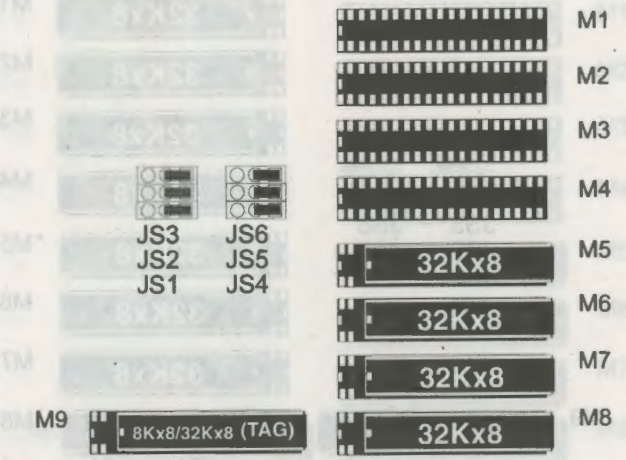
1. Locate the cache memory on the mainboard.
2. Be guided by the Cache SRAM settings depending on your desired SRAM configuration.

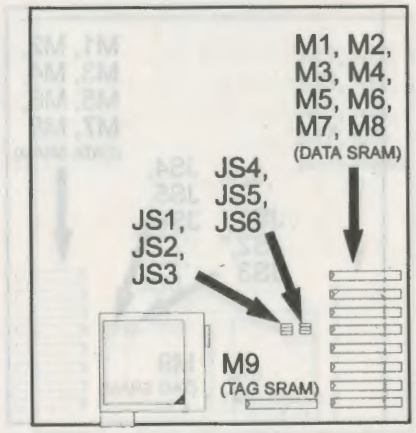
Correct orientation of the chip is necessary for the cache to operate properly. Normally, the chips have either a curved notch or a dot. This marker on the chip must be matched to the marker on the socket for correct alignment.

Install the chips individually as follows:

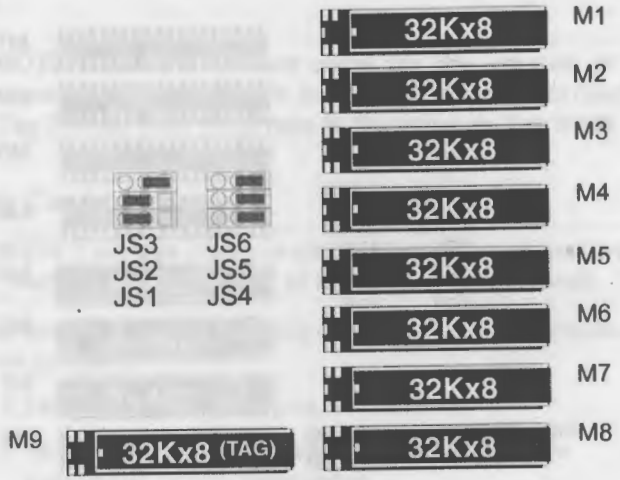
3. Align the chip with the marker on the socket. Press the chip onto the socket, ensuring that the pins on the chip are aligned with the corresponding connections on the socket.
4. Press the chip completely into the socket so that the pins are properly seated.

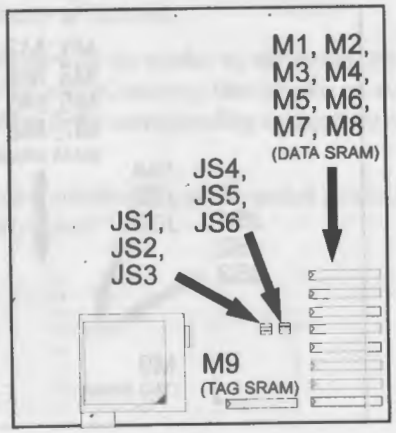
128KB Cache SRAM



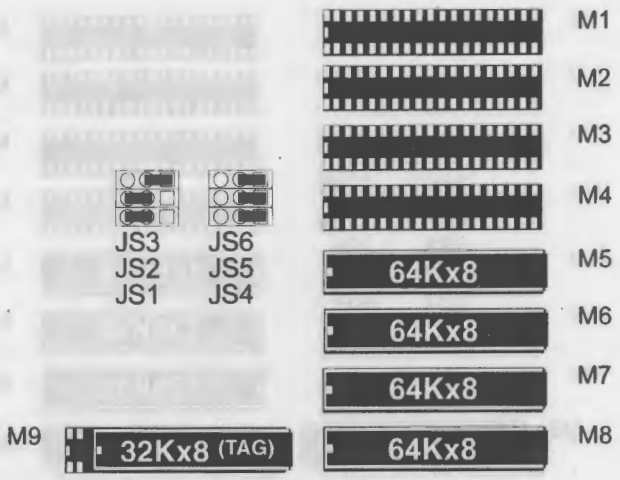


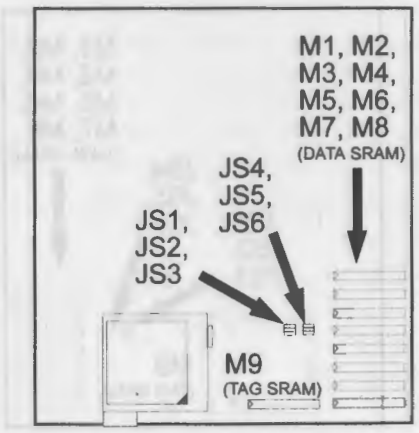
256KB Cache SRAM



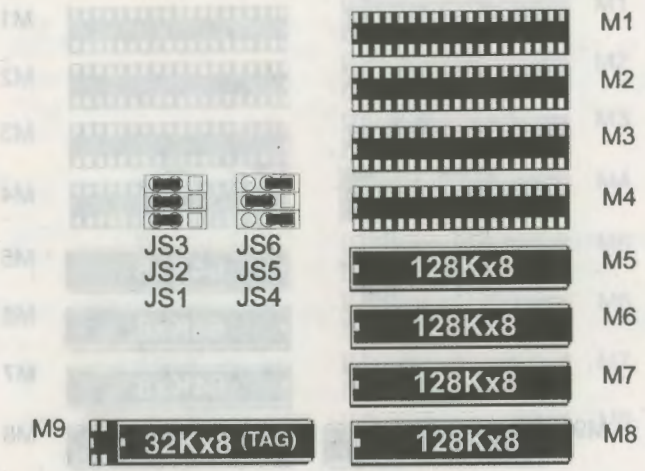


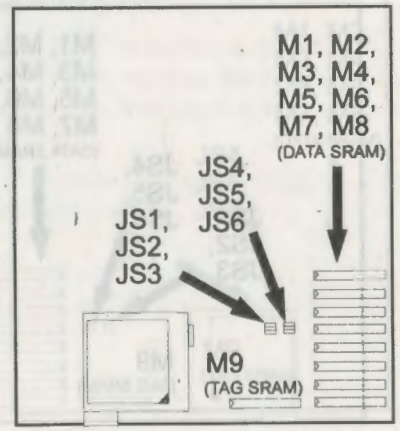
256KB Cache SRAM (The Alternative Insertion)



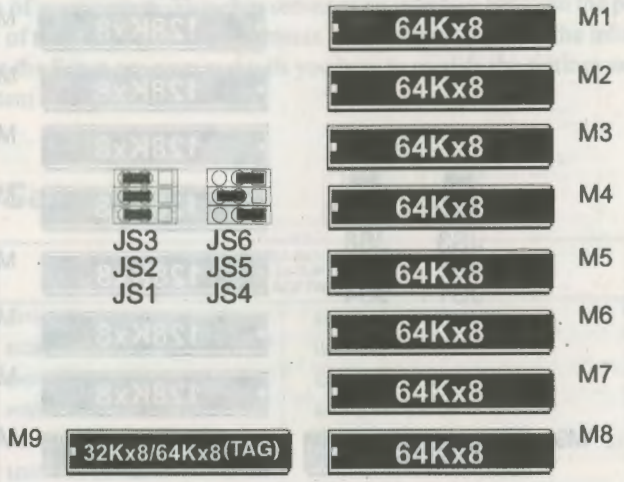


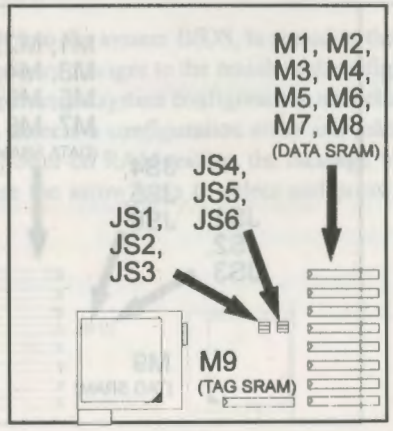
512KB Cache SRAM



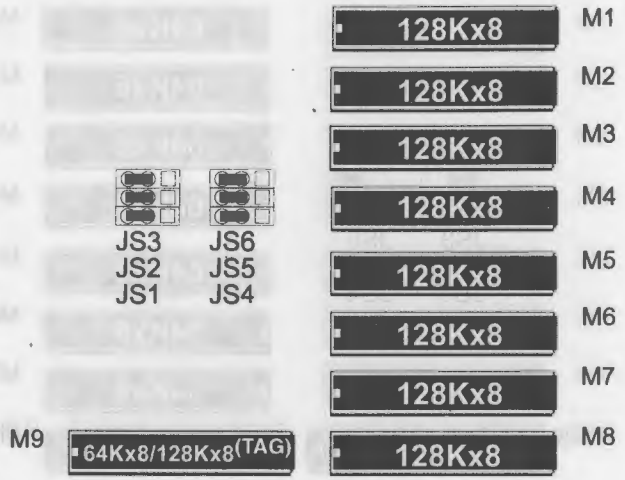


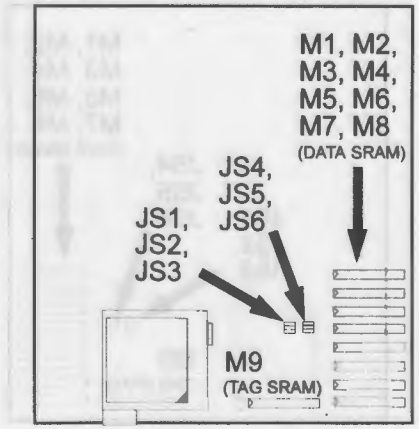
512KB Cache SRAM (The Alternative Insertion)





1MB Cache SRAM





Chapter 4

Award BIOS Setup

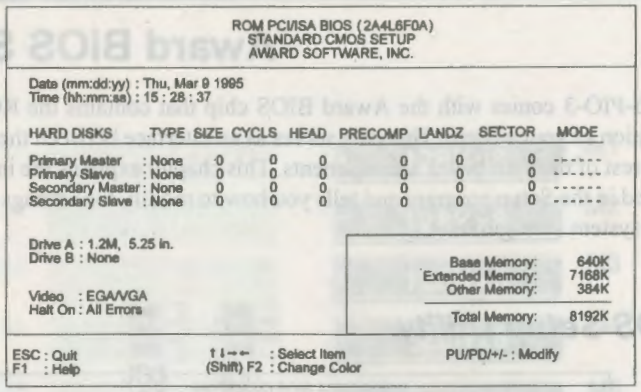
The 486-PIO-3 comes with the Award BIOS chip that contains the ROM Setup information of your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This chapter explains the information contained in the Setup program and tells you how to modify the settings according to your system configuration.

CMOS Setup Utility

ROM PCI/ISA BIOS (2A4L6F0A) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PCI CONFIGURATION SETUP	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
Esc : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

A Setup program, built into the system BIOS, is stored in the CMOS RAM. This Setup utility program allows changes to the mainboard configuration settings. It is executed when the user changes system configuration; user changes system backup battery; or the system detects a configuration error and asks the user to run the Setup program. After power-on RAM testing, the message "**Press DEL to enter SETUP.**" appears. Use the arrow keys to select and press **<Enter>** to run the selected program.

Standard CMOS Setup



The Standard CMOS Setup screen is displayed above. Each item may have one or more option settings. The system BIOS automatically detects memory size, thus no changes are necessary. Use the arrow keys to highlight the item and then use the **<PgUp>** or **<PgDn>** keys to select the value you want in each item.

Hard Disk Configurations

TYPE : Select from **"1"** to **"45"** to fill remaining fields with predefined values of disk drives. Select **"User"** to fill the remaining fields.

Select **"Auto"** to detect the HDD type and mode automatically.

SIZE : The hard disk size. The unit is Mega Bytes.

CYLS : The cylinder number of the hard disk.

HEAD : The read/write head number of hard disk

PRECOMP : The cylinder number at which the disk drive changes the write timing.

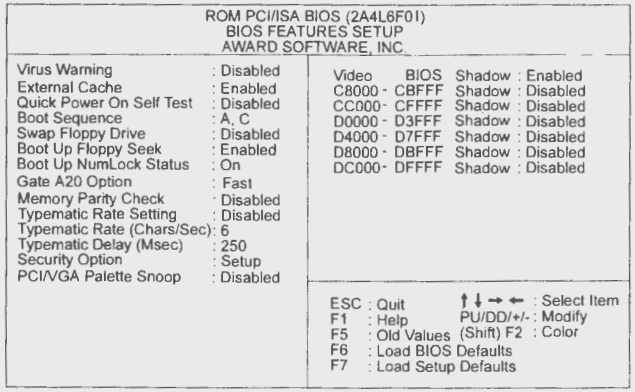
LANDZ : The cylinder number that hard disk drive heads (read/write) are seated when the disk drive is parked.

SECTOR : The sector number of each track defined on the hard disk. The range is from **"1"** to **"64"**.

MODE : Some hard disks support LBA mode for data transfer.If your disk supports this feature, select **"LBA"**. Otherwise, select **"Normal"**.

Please refer to the IDE HDD Auto Detection section on page 4-17 for a quick configuration of new hard drives.

BIOS Features Setup



Moving around the BIOS Features Setup program shown above works the same way as moving around the Standard CMOS Setup program. Users are not encouraged to run the BIOS Features Setup program. Your system should have been fine-tuned before shipping. Improper Setup may cause the system to fail, consult your dealer before making any changes.

Virus Warning

When enabled, assigns the BIOS to monitor the master boot sector and the DOS boot sector of the first hard disk drive.

The options are: Enabled, Disabled (Default)

External Cache

When enabled, supports an optional cache SRAM.

The options are: Enabled (Default), Disabled

Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test.

The options are: Enabled, Disabled (Default)

Boot Sequence

Allows the system BIOS to first try to boot the operating system from the selected disk drive.

The options are: A, C (Default); C, A

Swap Floppy Drive

Allows you to switch the order in which the operating system accesses the floppy drives during boot up.

The options are: Enabled, Disabled (Default)

Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands.

The options are: Enabled (Default), Disabled

Boot Up Numlock Status

When set to On, allows the BIOS to automatically enable the Num Lock Function when the system boots up.

The options are: On (Default), Off

Gate A20 Option

When set at Fast, allows a faster access response under Protected mode.

The options are: Fast (Default), Normal

Memory Parity Check

When enabled, allow DRAMs to execute the parity bit check.

The options are: Disabled (Default), Enabled

Typematic Rate Setting

The term "**typematic**" means that when a keyboard key is held down, the character is repeatedly entered until the key is released. When this item is enabled, you may change the typematic repeat rate.

The options are: Disabled (Default), Enabled

Typematic Rate (Chars/Sec)

Sets the rate of a character repeat when the key is held down.

The options are: 6 (Default), 8, 10, 12, 15, 20, 24, 30

Typematic Delay (Msec)

Sets the delay time before a character is repeated.

The options are: 250 (Default), 500, 750, 1000 millisecond

Security Option

Allows you to set the security level of the system.

The options are: Setup (Default), System

PCI/VGA Palette Snoop

When enabled, allows you to install an enhanced graphics adapter card. If your graphics adapter card does not support the Palette Snoop function, please set at Disable to avoid system malfunctions.

The options are: Enabled, Disabled (Default)

Video BIOS Shadow

Allows the BIOS to copy the video ROM code of the add-on video card to the system memory for faster access.

The options are: Enabled (Default), Disabled

C8000-CBFFF to DC000-DFFFF Shadow

Allows the BIOS to copy the BIOS ROM code of the add-on card to system memory for faster access. It may improve the performance of the add-on card.

Some add-on cards will not function properly if its BIOS ROM code is shadowed. To use these options correctly, you need to know the memory address range used by the BIOS ROM of each add-on card.

The options are: Enabled, Disabled (Default)

Chipset Features Setup

ROM PCI/ISA BIOS (2A4L6F0I)
CMOS SETUP UTILITY
CHIPSET FEATURES SETUP

Auto Configuration	: Enabled	Onboard local bus IDE	: Enabled
Decoupled Refresh	: Enabled	IDE HDD Block Mode	: Enabled
Video BIOS Cacheable	: Enabled	IDE Primary Master PIO	: Auto
System BIOS Cacheable	: Enabled	IDE Primary Slave PIO	: Auto
Combine Alter & Tag Bits	: Disabled	2nd IDE Controller	: Enabled
CHRDY for ISA Master	: Enabled	Onboard FDD Controller	: Enabled
Memory Hole At 15Mb Addr.	: Disabled	Onboard Serial Port 1	: COM1 at 3F8h
Cache Timing Control	: Fast	Onboard Serial Port 2	: COM2 at 2F8h
DRAM Timing Control	: Fast	Onboard Parallel Port	: 378H
Fast DRAM	: Enabled	Onboard Parallel Mode	: Normal

ESC	: Quit	↑↓→←	: Select Item
F1	: Help	PU/DD/+/-	: Modify
F5	: Old Values	(Shift) F2	: Color
F6	: Load BIOS Defaults		
F7	: Load Setup Defaults		

Auto Configuration

When enabled, it will not allow you to select the options in the feature AT Bus Clock. Therefore, if you want to select the AT Bus Clock, you have to set at Disabled here.

The available options are: Enabled (Default), Disabled

Decoupled Refresh

When enabled, the onboard DRAM will be decoupled from ISA bus memory device so that the processor can re-access the onboard DRAM without waiting for the completion of ISA bus memory refresh.

Disable this if you are using the ISA type ET-4000 VGA card.

The available options are: Enabled (Default), Disabled

Video BIOS Cacheable

When enabled, allows the system to use the video BIOS codes from SRAMs, instead of the slower DRAMs or ROMs.

The available options are: Enabled (Default), Disabled

System BIOS Cacheable

When enabled, allows the ROM area F000H-FFFFH to be cacheable when cache controller is activated.

The available options are: Enabled (Default), Disabled

Combine Alter & Tag Bits

When enabled, allows the alter bit to check if external cache executes data write-back to main memory or not.

The available options are: Enabled, Disabled (Default)

CHRDY for ISA Master

When enabled, allows the system BIOS to extend the ISA Master cycle for ensure operation.

The available options are: Enabled, Disabled (Default)

Memory Hole At 15M Addr.

When enabled, the memory hole at the 15MB address will be relocated to the 15~16MB address range of the ISA cycle when the processor accesses the 15~16MB address area.

When disabled, the memory hole at the 15MB address will be treated as a DRAM cycle when the processor accesses the 15~16MB address area.

The available options are: Enabled, Disabled (Default)

Cache Timing Control

When enabled, allows the system to adjust the data access speed of VT82C496G Controller to external cache.

The options are: Normal, Medium, Fast (Default), Turbo

DRAM Timing Control

When enabled, allows the system to speed up the data access of VT82C496G.

The options are: Normal, Medium, Fast (Default)

Fast DRAM

When enabled, allows the processor to access DRAM in page mode if enable it if no cache memory inserted.

The available options are: Enabled (Default), Disabled

Onboard Local Bus IDE

When enabled, allows IDE drives to use the 496G Local Bus IDE Controller.

The available options are: Enabled (Default), Disabled

IDE HDD Block Mode

When enabled, allows the system to execute read/write requests to hard disk in block mode.

The available options are: Enabled (Default), Disabled

IDE Primary Master PIO

Allows you to select the first PCI IDE channel of the primary master hard disk mode or to detect it by the BIOS.

The available options are: Auto (Default), Mode 1, 2, 3, 4

IDE Primary Slave PIO

Allows you to select the first PCI IDE channel of the primary slave hard disk mode or to detect it by the BIOS.

The available options are: Auto (Default), Mode 1, 2, 3, 4

2nd IDE Controller

Enable it if IDE drives use the onboard standard ISA IDE controller.

The available options are: Enabled (Default), Disabled

Onboard FDD Controller

When enabled, the floppy diskette drive (FDD) is activated.

The available options are: Enabled (Default), Disabled

Onboard Serial Port 1

If the serial port 1 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM 3 or COM 4 may be needed.

The options are: COM1 at 3F8h (Default), COM2 at 2F8h, COM3 at 3E8h, COM4 at 2E8h

Onboard Serial Port 2

This item is similar to the one above, but applicable to the serial port 2. If an I/O card needs to be installed, COM 3 or COM 4 may be needed.

The options are: COM1 at 3F8h, COM2 at 2F8h (Default), COM3 at 3E8h, COM4 at 2E8h

Onboard Parallel Port

Select from a given set of parameters if the parallel port uses the onboard I/O controller.

The options are: 278H, 3BCH, 378H (Default), Disabled

Onboard Printer Mode

Allows you to connect with an advanced printer.

Select "**Normal**" for standard parallel port (SPP) used on IBM PC/XT, PC/AT and bi-directional parallel port. Select "**Extended**" for extended parallel port. Select "**EPP Mode**" for enhanced parallel port. Select "**ECP Mode**" for Microsoft and HP Extended Capabilities Parallel Port.

The options are: Normal (Default), Extended, EPP Mode, ECP Mode

Power Management Setup

For Regular Processors:

ROM PCI/ISA BIOS (2A5L9F09)
CMOS SETUP UTILITY
POWER MANAGEMENT SETUP

Power Management	: Disabled		
Suspend Timer	: 8 min		
HDD Power Management	: Disabled		

ESC : Quit	↑↓→← : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift) F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

For SMM Processors:

ROM PCI/ISA BIOS (2A5L9F09)
CMOS SETUP UTILITY
POWER MANAGEMENT SETUP

Power Management	: Disabled	IRQ 3 Activity	: Primary
Doze Timer	: 2 min	IRQ 4 Activity	: Primary
		IRQ 5 Activity	: Primary
		IRQ 7 Activity	: Primary
Sleep Timer	: 2 min	IRQ 8 Activity	: Secondary
Sleep Mode	: Suspend	IRQ 10 Activity	: Primary
HDD Power Management	: Disabled	IRQ 11 Activity	: Primary
VGA Activity Wakeup	: Disabled	IRQ 12 Activity	: Primary

ESC : Quit	↑↓→← : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift) F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

Many PC users never turn their computers off because of delays in reloading their operating system or applications. An energy efficient mainboard combats such energy waste by using System Management Mode (SMM), static technology, and processor clock control to conserve energy.

During periods of inactivity, the system automatically initiates a power saving mode, reducing both the system and monitor power. The Power Management Setup allows you to blank out the VGA display, slow down processor speed, and turn off HDD spindle motor during a set period of time.

Some SMM processors include a Doze, Sleep, and Suspend feature in Suspend mode which allows the processor to reduce power consumption.

Power Management

When enabled, allows you to use the Power Management features.

The available options are: Enabled, Disabled (Default)

Doze Timer

Processor speed will slowdown and enter "**Doze Mode**" assuming there is no operation during the selected period. Normal processor speed is resumed by pressing any key.

The options are: 8 sec, 32 sec, 2 min (Default), 8 min, 16 min.

Suspend Timer

Allows you to select a specified period of time before the system enters the "**Suspend mode**".

The available options are: 2, 8 (Default), 16 and 32 min.

Suspend Mode

When enabled, the mainboard enters the "**Suspend Mode**" if there is no operation during the specified period in the Suspend Timer.

The options are: Enabled (Default), Disabled

HDD Power Management

Allows the HDD spindle motor to turn off after a certain time period.

The options are: Disabled (Default), 5, 10, 15, 20 min.

VGA Activity Wakeup

When enabled, allows the Doze Timer to start counting when no activity is detected on the VGA display.

The available options are: Enabled, Disabled (Default)

IRQ# Activity

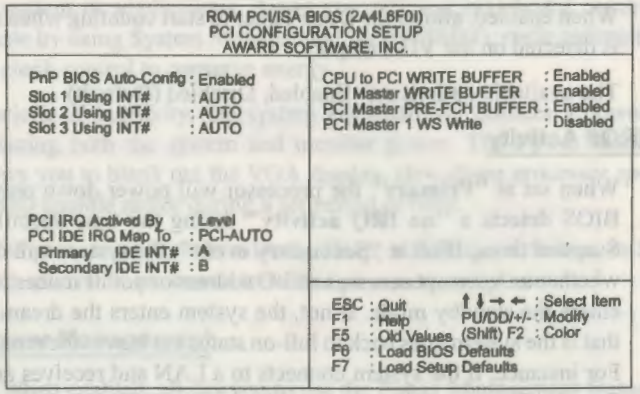
When set at "**Primary**" the processor will power down only after the BIOS detects a "**no IRQ activity**" during the time specified by the Suspend timer. If set at "**Secondary event**", the system will distinguish whether an interrupt accesses an I/O address or not. If it does, the system enters the standby mode. If not, the system enters the dreaming mode; that is the system goes back to full-on status but leaves the monitor blank. For instance, if the system connects to a LAN and receives an interrupt from its file server, the system will enter the dreaming mode to execute the corresponding calling routine.

The options are: Primary, Secondary

The default values of IRQ3, 4, 5, 7, 10, 11, 12 are: Primary

The default value of IRQ8 is: Secondary

PCI Configuration Setup



The 486-PIO-3 mainboard provides three PCI card slots, marked PCI 1, PCI 2, PCI 3, respectively. They can be used either as a master slot or a slave slot. A master slot is an agent slot that initiates a bus transaction. A slave slot, on the other hand, is an agent slot that responds to a bus transaction initiated by a master slot. The following provides a brief description of the various features found in the PCI Configuration Setup utility.

PnP BIOS Auto-Config

When enabled, the available IRQs used on the ISA slots are configured automatically by the BIOS.

The options are: Enabled (Default), Disabled

Slot 1-3 Using INT#

Allows the BIOS to automatically detect which interrupt is used by the add-on card in the selected PCI slot.

The options are: AUTO (Default), A, B, C, D

Available IRQ

Allows the BIOS to assign an available IRQ if the attached PCI device needs an IRQ path to access the mainboard.

The options are: NA, 5, 9, 10, 11, 14, 15

PCI IRQ Activated By

We suggest that you set this to its default configuration unless you are a qualified technician.

The options are: Level (Default), Edge

PCI IDE IRQ Map To

Set "**PCI-AUTO**" to allow the system BIOS to automatically detect the add-on PCI IDE card interrupt used by the PCI hard disk drive.

The options are: PCI-AUTO (Default), PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, PCI-SLOT4, ISA

CPU to PCI Write Buffer

When enabled, allows data and address access to the internal buffer of VT82C505 so that the processor can be released from the wait state.

The options are: Enabled (Default), Disabled

PCI Master Write Buffer

When enabled, allows the PCI write operation by informing the processor of pending data from the PCI device. Processor is released from waiting state by a signal from the master card.

The options are: Enabled (Default), Disabled

PCI Master Prefetch

When enabled, allows the data and address to be saved in the internal buffer of VT82C505 to reduce master drive access time.

The options are: Enabled (Default), Disabled

PCI Master 1WS Write

When enabled, allows one more wait state cycle delays when the PCI master drive writes data to DRAM.

The options are: Enabled, Disabled (Default)

Interrupt Assignments of PCI Slots

SLOT	INT OF SLOT	INT OF VT82C505
PCI Slot 1	A	A
	B	B
	C	C
	D	D
PCI Slot 2	A	B
	B	C
	C	D
	D	A
PCI Slot 3	A	C
	B	D
	C	A
	D	B

Load BIOS Defaults

BIOS defaults contain the most appropriate values of the system parameters that allow minimum system performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burns into the ROM.

Load Setup Defaults

Selecting this field loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

Supervisor/User Password

To enable the Supervisor/User passwords, select the item from the Standard CMOS Setup. You will be prompted to create your own password.

Type your password up to eight characters and press <**Enter**>. 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 not enter a password. To disable password, press <**Enter**> when you are prompted to enter password. A message appears, confirming the password is disabled.

Under the BIOS Feature Setup (refer to page 4-4) if **System** is selected under the Security Option field and the **Supervisor Password** is enabled, you will be prompted for the Supervisor Password every time you reboot the system. If **System** is selected and the **User Password** is enabled, you will be requested to enter the User Password before booting and every time you try to enter the CMOS Setup.

If **Setup** is selected under the Security Option field and the **User Password** is enabled, you will be prompted only when you try to enter CMOS Setup.

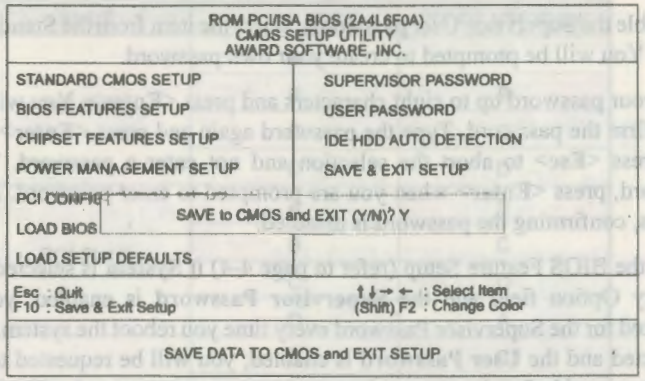
Clear Password

If you forget your password, turn off the system power first and remove the system unit cover. Locate Jumper JCP and insert the jumper cap. Then, you may power on the system. At this point, you will not be asked for the password to enter Setup.

IDE HDD Auto Detection

The IDE Hard Disk Drive Auto Detection feature automatically configures your new hard disk. Use it for a quick configuration of new hard drives.

Save and Exit Setup



After you have made changes under Setup, press <**Esc**> to return to the main menu. Move cursor to "**Save and Exit Setup**" or press "**F10**" and then press "**Y**" to change the CMOS Setup. If you did not change anything, press <**Esc**> again or move cursor to "**Exit Without Saving**" and press "**Y**" to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility:

SAVE to CMOS and EXIT (Y/N)?

Exit Without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications:

Quit Without Saving (Y/N)?

→ **NOTE : Default values of the various Setup items on this chapter may not necessarily be the same ones shown on your screen.**