



MGPS-PNTM System Board User's Guide

P/N: 771946

Version: D01

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Mylex MGPS-PNTM System Board

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Handling Precautions

This product contains electronic components that are highly sensitive to electrostatic discharge. Use extra caution when handling this product to ensure there is adequate grounding around the work area the board is being installed. ALWAYS wear a ground strap or ground your body by touching a grounded object such as an unpainted metal device connected to power ground.

This product has delicate crystal oscillators that can break if subjected to sudden shock such as being tossed on a table. Use care when moving it from point to point.

If Troubles Are Encountered

If this product displays improper operation during the course of installation or operation, make sure that all components are seated tightly and configured correctly. Pay particular attention to the jumper settings and the BIOS setup. If the product continues to operate improperly, contact your dealer or distributor for additional information.

Dealers and Distributors may contact Mylex's Technical Support Department at (510) 796-6100 after first completing the enclosed System Problem Report.

Package Contents

MGPS-PNTM System Board
This User's Guide
Warranty Card
Any pertinent release notes available at the time of shipment
System Problem Report Form
Utility Diskette

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A – Updating the System BIOS

Chapter 1

Introduction

About This User's Guide

This manual is arranged to help you set up and run the MGPS-PNTM system board.

- Chapter 1, *Introduction*, describes the functions and features of the system board and specifications.
- Chapter 2, *System Board Setup*, includes detailed information on how to install and configure the MGPS system board.
- Chapter 3, *Memory Installation*, describes the size and configuration of the on-board memory and external cache memory, and gives instructions for installing the memory devices on the system board.
- Chapter 4, *BIOS Setup*, explains how to adjust the BIOS setup using the software to make use of the board's multiple features.
- Appendix A, *Upgrading the BIOS*, gives instructions on how to update the BIOS Flash ROM using the manufacturer's latest software.

The Green PC Function

The Power Management Unit (PMU) controls and dramatically reduces overall system power consumption. This is accomplished by the activity monitors, which detect the system inactivity timer time-out, and signals the power-saving devices to slow down the clock frequency or remove the power sources from various peripherals.

There are four power management modes: Normal, Doze, Standby, and Suspend.

- **NORMAL mode:** This mode is the normal operation of the PC system. In this mode, the doze timer starts counting if no activity is taking place and the programmable time-out period has expired.
- **DOZE mode:** In this mode, the CPU clock frequency is slowed to one-half the normal frequency.
- **STANDBY mode:** This mode scales the CPU and system clock to a lower frequency (8MHz) and turns off the video signal to conserve power to the display monitor.
- **SUSPEND mode:** In this mode, the PMU stops the CPU clock, slows down the system clock, and powers down the external cache.

The power management setup is described under **BIOS Setup** in Chapter 4.

Specifications

CPU Types

Supported: Intel Pentium™ Processor 75/90/100 MHz (P54C)
CPU ZIF socket 5 installed

System Clock: 50/60/66 MHz

Memory: Four 72-pin (32- or 36-bit) SIMM sockets, 1, 2, 4, 8, 16,
or 32MB SIMM's, 70ns or faster

Maximum 128MB on-board system memory

Cache Memory: Supports 256KB, 512KB, or 1MB;
32Kx8, 64Kx8, 128Kx8 DIP standard and 3.3V or mixed
voltage (5V supply, 3.3V output) SRAM

Maximum cache is 1MB

On-Board I/O Two RS-232-C serial outputs (COM1 and COM2), one
parallel printer port, floppy disk drive controller, and IDE
hard disk drive controller.

Expansion Slots: ISA bus 16-bit x 5

PCI Local Bus x 3 (all are master mode)

Shadow RAM: System BIOS, video BIOS and adapter ROM BIOS

BIOS: Award Pentium™ PCI BIOS with NCR PCI SCSI BIOS

PCB Size: 220 x 330 mm 4-layer PCB

Turbo Speed: Software/hardware toggle controlled

Green PC: Meets EPA Green PC standard. Power consumption is
under 30W during the Doze, Standby or Suspend mode

Jumpers and Connectors

The following is a list of the jumpers and connectors used on the MGPS-PNTM system board. The referenced pages provide more details.

Jumper / Connector No.	Function	Ref Page
J1	Keyboard Connector	2-6
J2	Power Supply Connector	2-6
J3	RS-232-2 (COM2) Connector	2-7
J4	RS-232-1 (COM1) Connector	2-7
J5	Parallel Printer Connector	2-7
J6	Floppy Drive Connector	2-7
J7	IDE HDD Connector	2-7
JP1	SIMM Module Setting Jumper	2-1
JP2	Power Saving Toggle Switch Connector	2-7
JP7, JP8	Cache Size Setting Jumper	2-3
JP10, JP11	System Clock Setting Jumper	2-3
JP12	HDD Activity LED Connector	2-8
JP21	Reserved (Open)	NA
JP22	Keyboard Lock Connector	2-8
JP23	Turbo LED Connector	2-8
JP24	Reset Switch Connector	2-9
JP25	Turbo Switch Connector	2-9
JP26	Speaker Connector	2-9
JP28	Cache SRAM Voltage Setting Jumpers (2)	2-3
JP30	Flash ROM Setting Jumper	2-4

Chapter 2

System Board Setup

This chapter describes the individual jumpers and connectors switches on the MGPS-PNTM system board. If your system board has already been installed by the dealer, you should refer to this chapter if you plan to make any changes or upgrade your system.

Installing the CPU

The Intel Zero Insertion Force (ZIF) socket incorporated on the MGPS system board is designed specifically for the Pentium processor. When inserting the Pentium onto the socket, make sure pin 1 is properly aligned with the angled corner of the socket. Figure 2-1 illustrates the alignment.

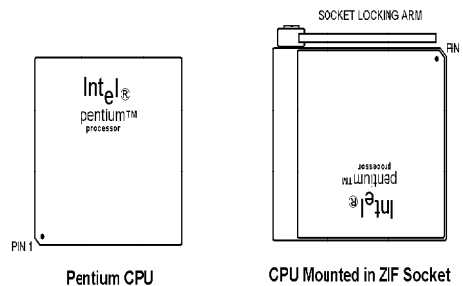


Figure 2-1. Pentium CPU Pin Alignment

Locate the dot and notch (Pin 1) on one of the processor's corners and the angled corner of the ZIF socket. Raise the ZIF socket arm and insert the processor into the socket with pin 1 aligned at the angled corner. Fully lower the socket arm to lock the processor in place.

System Board Jumpers

Jumpers are used to select between various operating modes or options. A jumper switch consists of two or three gold pins projecting from the system board. Placing the plastic jumper cap over two pins connects those pins and makes a particular selection. If the cap is not placed over two pins, the pins are open and a connection is not made. This is the general method for storing jumpers when a connection is not required.

For all of the following jumpers,

- 1 – 2 indicates that a jumper is to be installed between pins 1 and 2 (pin 1 is identified only on connectors with 3 or more pins).
- 2 – 3 indicates that a jumper is to be installed between pins 2 and 3.
- “Short” indicates a jumper is installed on a connector with 2 or more pins.
- “Open” or no entry indicates that no jumper is to be installed (store the jumper on one pin only).

Figure 2-2 illustrates the jumper pins and cap, and the schematic equivalent. The Jumpers and Connectors Quick Reference located at the end of this chapter provides a layout of the system board to identify major components, jumpers and connectors.

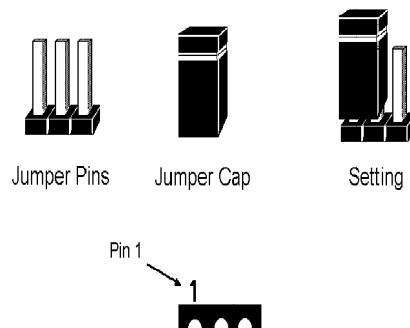


Figure 2-2. Jumper Pins, Cap and Layout

The following jumpers are used on the MGPS-PNTM system board. Please refer to the referenced pages for additional details:

Jumper No.	Function	Ref. Page
JP1	Main Memory SIMM type	3-1
JP7, JP8	Cache Memory Size	3-3
JP10, JP11	System Clock Speed	2-3
JP28	Cache SRAM Voltage	2-3
JP30	Flash ROM BIOS	2-3

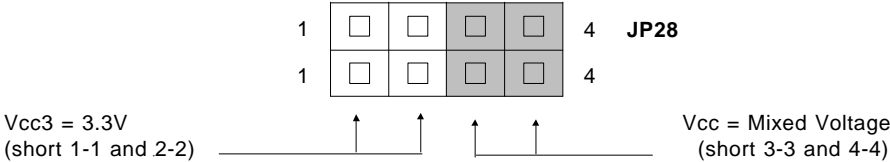
System Clock Speed (JP10, JP11)

The MGPS system board supports Intel 75/90/100 MHz Pentium processors (P54C), running at equivalent system clock speeds. You must set the System Clock setting jumpers (JP10 and JP11) to match the speed of the microprocessor.

CPU Type	System Clock	Clock Setting Jumper	
		JP10	JP11
P54C-75	50 MHz	Open	Open
P54C-90	60 MHz	Open	Short
P54C-100	66 MHz	Short	Short

Cache SRAM Voltage (JP28)

Cache SRAM's may be 3.3V or mixed voltages (5V supply, 3.3V output). Insert two jumper caps to short the two pairs of Vcc3 pins for 3.3V SRAM's; short the two pairs of Vcc pins when using 5V or mixed voltage SRAM's (shown below set for Vcc = mixed voltage).



Flash ROM BIOS (JP30)

Set jumper JP30 (3-pins) for programming the flash ROM BIOS. Full details with display menus to upgrade the system BIOS are presented in Appendix A of this User's Guide. Please refer to Appendix A for instructions on how to upgrade your system BIOS.

JP30	Description
1-2	Normal Operation (default)
2-3	System BIOS Programming mode

System Board Connectors

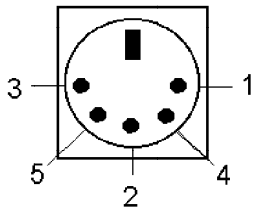
Connectors interface the system board to other parts of the system, including the power supply, drives, keyboard and various controls on the front panel of the system case. Some connectors are polarized and require specific alignment during installation. Polarized connectors are shown with a plus (+) sign to denote the positive pin.

The following connectors are available on the MGPS system board:

Conn. No.	Function	Ref. Page
J1	Keyboard	2-6
J2	Power Supply	2-6
J3	RS-232-2 (COM2) Serial Port	2-7
J4	RS-232-1 (COM1) Serial Ports	2-7
J5	Parallel Printer Port	2-7
J6	Floppy Drive Controller	2-7
J7	IDE Hard Disk Drive Controller	2-7
JP2	Power Saving Toggle Switch	2-7
JP12	HDD Activity LED	2-8
JP21	Reserved (Open)	
JP22	Keyboard Lock/Power-On LED	2-8
JP23	Turbo LED	2-8
JP24	System Reset Switch	2-9
JP25	Turbo Switch	2-9
JP26	External Speaker	2-9

Keyboard (J1)

This 5-pin DIN connector interfaces the keyboard to the system board.



J1-	Description
1	Keyboard Clock
2	Keyboard Data
3	No Connection
4	Ground
5	+5Vdc

Power Supply (J2)

Most power supplies have two 6-wire plugs that must be connected to the system board. There are two black wires on each plug. Align the plugs so that the two black wires on each plug are positioned in the middle of the P1 connector as illustrated below. Before connecting to the power supply, make sure it is not connected to the AC power source.

J2-	Description	Wire Color
1	Power Good	Orange
2	+5V	Red
3	+12V	Yellow
4	-12V	Blue
5	Ground	Black
6	Ground	Black
7	Ground	Black
8	Ground	Black
9	-5V	White
10	+5V	Red
11	+5V	Red
12	+5V	Red

RS-232-2 (COM2) Serial Port (J3)

Use this I/O serial port to interface a variety of devices, such as a mouse, modem, etc.

RS-232-1 (COM1) Serial Port (J4)

Use this I/O serial port to interface a variety of devices, such as a serial mouse, modem, etc.

Parallel Printer Port (J5)

Interface a parallel printer to this port.

Floppy Drive Controller (J6)

A floppy disk drive controller adapter card is not required with the MGPS system board. Connect a 5.25" or 3.5" floppy disk drive to this on-board controller. Two floppy disk drives can be connected on a standard drive cable in the same manner as when using a controller adapter card.

IDE Hard Disk Drive Controller (J7)

A hard disk drive controller adapter card is not required with the MGPS system board. Connect a hard disk drive to this on-board IDE controller. Two hard disk drives can be connected on a standard drive cable in the same manner as when using a controller adapter card.

Power Management Mode Control (JP2)

By connecting JP2 to a control switch on the front panel of the system case, you can directly trigger the system into the Suspend mode. This will reduce the CPU clock to zero MHz and power down the external cache. The system can be resumed by again pressing the power saving control switch or by using the auto-wake-up feature (pressing any key or moving the mouse).

The system will go into its power saving mode when the connector is shorted by the mode control switch, and revert to normal operation when the connector is open.

HDD Activity Indicator (JP12)

This 4-pin connector can interface an LED on the front panel of the system case to indicate the activity status of the hard disk drive. The connector has two sets of pins (1-2 and 3-4); either set may be used for the respective LED (pins 1 and 4 are positive). Connect an LED between pins 1 and 2, or pins 3 and 4 of JP12 to indicate the activity status of the hard disk drive.

Keyboard Lock Switch and Power-On LED (JP22)

When connected to a key switch on the front panel of the system case, turning and removing the key will disable the keyboard to prevent other users from operating your computer when you are not present. Orient the cable correctly when connecting the key switch to the main board; pin 1 is located on the top and pin 5 is on the bottom when viewing the board as shown in the Quick Reference at the end of this chapter.

JP22-	Description
1	+5Vdc (Power-On LED)
2	No Connection
3	Ground (Power-On LED)
4	Keylock Switch
5	Ground

Turbo LED (JP23)

Install the turbo LED to this connector to indicate when the turbo function is turned on. Observe polarity of the connector when installing the LED.

System Reset Switch (JP24)

This connector interfaces the system reset switch on the front panel of the case. The switch causes the system board to perform a cold start from the power-on self test without turning off power to components, such as the hard disk drive.

JP24-	Description
1	System Reset
2	Ground

Turbo Switch (JP25)

A case-mounted toggle switch installed at this connector will permit you to manually turn the turbo function on and off.

External Speaker (JP26)

An external speaker mounted inside the case can be interfaced to the system board through this connector. Pin 1 is located on the bottom and pin 4 is on the top when viewing the board as shown in the Quick Reference at the end of this chapter.

JP26-	Description
1	Speaker Signal
2	Ground
3	Ground
4	+5Vdc

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Chapter 3

Memory Installation

The MGPS-PNTM system board provides SIMM installation slots for 2MB to 128MB of system memory. There is also an external cache memory on the system board that can be installed with 0KB or up to 1MB in size. This chapter describes the types of memory devices that should be used with the system board and explains how to install the memory.

Main Memory

The system board supports any combination of 72-pin (32- or 36-bit) SIMM's x 4 up to 128MB. The DRAM installation requires jumper JP1 to be set according to the use of single-side (S/S) or double-side (D/S) SIMM's as illustrated in the table below. The on-board SIMM sockets are illustrated in the Jumpers and Connectors Quick Reference fold-out page at the end of Chapter 2. The socket pin arrangements are shown below. Possible configurations are shown in the table on the next page.

BANK 0		BANK 1		JP1
SIMM 1	SIMM 2	SIMM 3	SIMM 4	
S/S	S/S	---	---	1-2
		S/S	S/S	
D/S	D/S	---	---	2-3
		D/S	D/S	
		D/S	D/S	

72	1
SIMM 4	
SIMM 3	
SIMM 2	
SIMM 1	

Single-side 72-pin SIMM's are all 1MB, 4MB, or 16MB modules
Double-side 72-pin SIMM's are all 2MB, 8MB, or 32MB modules

--- = Empty

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Main Memory Configurations

No.	BANK 0		BANK 1		Total Memory
	SIMM 1	SIMM 2	SIMM 3	SIMM 4	
1	1MB SS	1MB SS	—	—	2MB
2	1MB SS	1MB SS	1MB SS	1MB SS	4MB
3	2MB DS	2MB DS	4MB SS	4MB SS	12MB
4	2MB DS	2MB DS	—	—	4MB
5	2MB DS	2MB DS	2MB DS	2MB DS	8MB
6	2MB DS	2MB DS	8MB DS	8MB DS	20MB
7	2MB DS	2MB DS	16MB SS	16MB SS	36MB
8	4MB SS	4MB SS	—	—	8MB
9	4MB SS	4MB SS	4MB SS	4MB SS	16MB
10	8MB DS	8MB DS	4MB SS	4MB SS	24MB
11	4MB SS	4MB SS	16MB SS	16MB SS	40MB
12	8MB DS	8MB DS	—	—	16MB
13	8MB DS	8MB DS	8MB DS	8MB DS	32MB
14	8MB DS	8MB DS	16MB SS	16MB SS	48MB
15	8MB DS	8MB DS	32MB DS	32MB DS	80MB
16	16MB SS	16MB SS	—	—	32MB
17	16MB SS	16MB SS	16MB SS	16MB SS	64MB
18	32MB DS	32MB DS	16MB SS	16MB SS	96MB
19	32MB DS	32MB DS	—	—	64MB
20	32MB DS	32MB DS	32MB DS	32MB DS	128MB

External Cache Memory

When you first install the cache memory on your system board or each time you upgrade or modify it, you will need to adjust the cache memory size setting for the appropriate memory level. The cache memory size for the system is set with jumpers JP7 and JP8, as illustrated in the following table.

Cache Size	Tag RAM (U26-U27)	Data RAM		JP7	JP8
		U26-U27	U35-U38		
256K	8K x 8	32Kx8	32Kx8	1 – 2	1 – 2
512K	32K x 8	64Kx8	64Kx8	2 – 3	1 – 2
1MB (1024K)	32K x 8	128Kx8	128Kx8	2 – 3	2 – 3

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Chapter 4

BIOS Setup

Award's BIOS ROM has a setup program that allows you to modify your basic system configuration. The BIOS data are stored in CMOS RAM so that the setup configuration will be retained when the power is turned off. Once the setup configuration is completed, you should need to access the BIOS Setup program only when you plan to change the setup, reset the date or time, etc.

CMOS Setup Utility

Power on the computer and press **Del** immediately to enter the Setup program. The CMOS Setup Utility (Initial) menu is shown in Figure 4-1.

ROM PCI/ISA BIOS (2A51A000) CMOS SETUP UTILITY AWARD SOFTWARE, INC.			
STANDARD CMOS SETUP		PASSWORD SETTING	
BIOS FEATURES SETUP		IDE HDD AUTO DETECTION	
CHIPSET FEATURES SETUP		HDD LOW LEVEL FORMAT	
POWER MANAGEMENT SETUP		SAVE & EXIT SETUP	
PCI & ONBOARD I/O SETUP		EXIT WITHOUT SAVING	
LOAD SETUP DEFAULTS			
ESC	Quit	↑↓→←	Select Item
F10	Save & Exit Setup	(Shift) F2	Change Color
Time, Date, Hard Disk Type			

Figure 4-1. BIOS Setup Program Initial Menu

Standard CMOS Setup

Choose the **Standard CMOS Setup** option from the CMOS Setup Utility menu. The menu in Figure 4-2 allows you to configure date, time, hard disk drive, floppy disk drive, display and memory. When a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen. Cursor movement directions are at the bottom of the screen.

ROM PCI/ISA BIOS (2A5IA000)						
STANDARD CMOS SETUP						
AWARD SOFTWARE, INC.						
Date (mm:dd:yy)	: Thu, Apr. 13 1995					
Time (hh:mm:ss)	: 15:05:00					
	CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
Drive C : None (0Mb)	0	0	0	0	0	---
Drive D : None (0Mb)	0	0	0	0	0	---
Drive A : 1.44, 3.5 in						
Drive B : None						
Drive A : 1.44M			Base Memory	640K		
Drive B : None			Extended Memory	15360K		
			Other Memory	384K		
Video : EGA/VGA			Total	16384K		
Halt On : All Errors						
Esc : Quit	↑↓→← : Select Item		PU/PD/++/-			
: Modify						
F1 : Help	(Shift) F2: Change Color					

Figure 4-2. Standard CMOS Setup Menu

Specifications for hard disk drives such as MFM, ESDI, or IDE, must be recorded here. SCSI drives operate with device drivers and are not supported directly by BIOS. The BIOS provides three modes to support IDE hard disks:

- Normal - for IDE drives smaller than 528MB, or as defined by your controller or HDD specifications.
- LBA - for drives larger than 528MB and up to 8.4GB that use Logic Block Addressing (LBA) mode.
- Large - for drives larger than 528MB that do not use LBA mode. The Large mode is a new specification which may not be fully supported

by all operation systems. Presently, it can only be used with MS-DOS.

BIOS Features Setup

Select the **BIOS Features Setup** option from the CMOS Setup Utility menu to display the screen in Figure 4-3. This menu contains the system board's default values. The values shown are manufacturer's defaults; they can be changed as needed for your system.

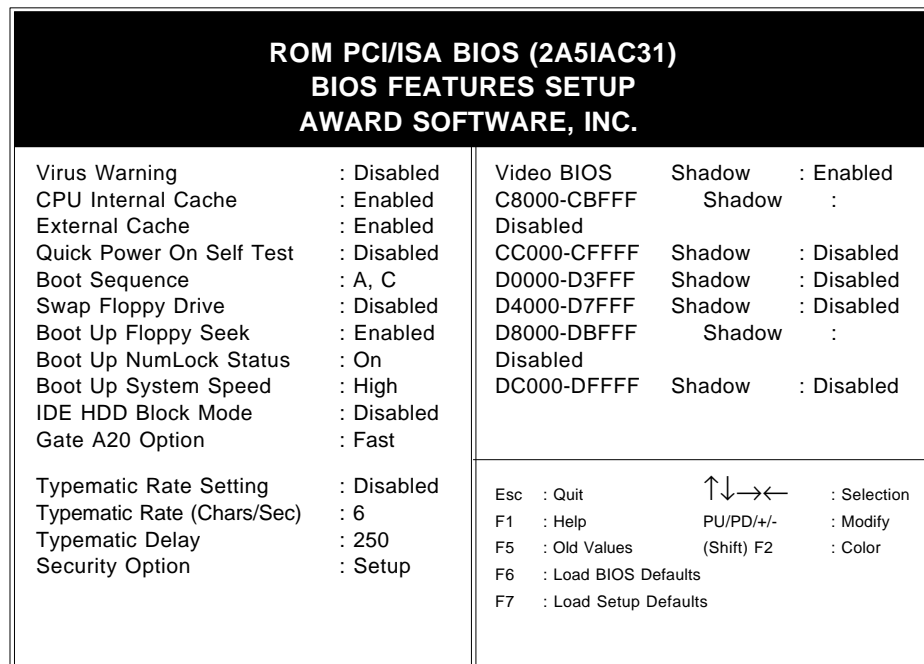


Figure 4-3. Standard CMOS Setup Screen

Virus Warning

Disabled Enabled

When enabled, this feature protects the boot sector and partition table of your hard disk. Any attempt to write to them will halt the system

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and cause a warning message to appear. If this happens, you can either allow the operation to continue or stop it.

Cache Control

CPU Internal Cache: Disabled Enabled
External Cache: Disabled Enabled

Boot Up Features

Quick Power On Self Test: Disabled Enabled

Allows the POST (Power On Self Test) procedure to run at either normal or fast speed.

Boot Sequence: A,C C,A

This selects the drive for the system to search first for boot data. If your system boots from the hard disk, you should select to search it first and eliminate the time spent searching for the data in drive A.

Swap Floppy Drive: Disabled Enabled

Enabling this feature swaps the floppy drive assignment so that drive A will function as drive B, and drive B will function as drive A.

Boot Up Floppy Seek: Enabled Disabled

During POST Procedure, the BIOS will determine if the installed floppy disk drive is 40 or 80 tracks (360KB is 40 tracks; 760KB, 1.2MB and 1.44MB are all 80 tracks). If this function is enabled, there will be a warning message when a 360K floppy drive is installed.

Boot Up NumLock Status: On Off

ON: Keypad is set to number-mode keys following.

Off: Keypad is set to arrow-mode Keys.

Boot Up System Speed: High Low

If set to high speed, the system will run at high speed immediately after power on.

IDE HDD Block Mode:

Disabled **Enabled**

This feature enhances hard disk performance by making multisector transfers instead of one sector per transfer. Most IDE drives, except very early designs, can use this feature.

Gate A20 Option

Fast **Slow**

Gate A20 controls the ability to access memory addresses above 1MB. It speeds up programs that constantly change from addressing conventional memory to addressing memory above 1MB (between real and protected address modes). For example, setting this option to fast makes programs such as network operating systems execute faster.

Typematic Rate Setting

Disabled **Enabled**

This feature defines the keyboard's Typematic Rate and Typematic Delay. When disabled, the default values of 6 characters/sec and 250ms delay are used.

Typematic Rate (Chars/Sec): The values are 6, 8, 10, 12, 15, 20, 24, and 30 characters per second.

Typematic Delay (key repeat rate): The values are 250, 500, 750, and 1000 milliseconds

Security Option

System: **Setup** **System**

Setup: The system will boot but access to the BIOS setup will be denied until the correct password is entered.

System: The system will not boot and access to the BIOS setup will be denied until the correct password is entered.

When either selection is enabled, a prompt will display for you to enter and confirm your own password. If a password is totally lost, you will need to reinstall the operating system in order to circumvent the password requirement.

System BIOS Shadow

Enables the system shadow to achieve the best performance of the system.

Video BIOS Shadow:	<input type="checkbox"/>	Disabled	<input type="checkbox"/>	Enabled
C8000-CBFFF:	<input type="checkbox"/>	Disabled	<input type="checkbox"/>	Enabled
CC000-CFFFF:	<input type="checkbox"/>	Disabled	<input type="checkbox"/>	Enabled
D0000-D3FFF:	<input type="checkbox"/>	Disabled	<input type="checkbox"/>	Enabled
D4000-D7FFF:	<input type="checkbox"/>	Disabled	<input type="checkbox"/>	Enabled
D8000-DBFFF:	<input type="checkbox"/>	Disabled	<input type="checkbox"/>	Enabled
DC000-DFFFF:	<input type="checkbox"/>	Disabled	<input type="checkbox"/>	Enabled

If you shadow the BIOS at any of the above segments, you can set the appropriate memory cacheable function to **Enabled**

Chipset Features Setup

Choose **Chipset Features Setup** from the CMOS Setup Utility menu to display the screen in Figure 4-4. This sample screen contains the manufacturer's default values for the system board.

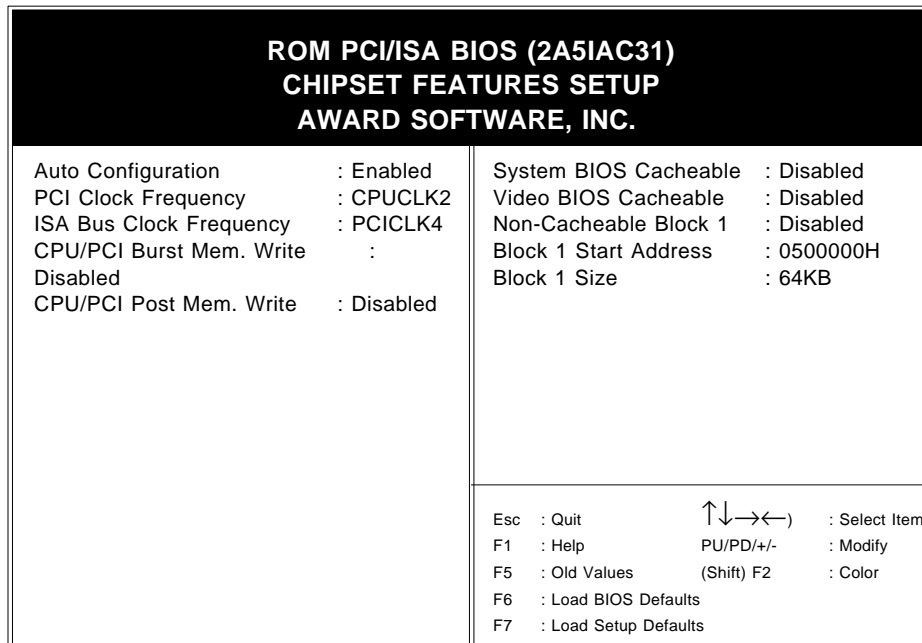


Figure 4-4. Chipset Features Setup Menu

By enabling **Auto Configuration**, the BIOS will automatically detect the CPU speed and auto-configure the bus frequency, DRAM speed, cache and read/write cycle.

All the entries shown in this menu are optional settings for the system board's chipset; the entries should not be changed.

Power Management Setup

Choose **Power Management Setup** from the CMOS Setup Utility menu to display the screen in Figure 4-5. This menu provides the Green PC power management features.

ROM PCI/ISA BIOS (2A5IAC31) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.			
Power Management	: User Define	VGA Activity	: Disable
PM Control by APM	: Yes	IRQ3 (COM2)	: Enable
Video Off Option	: Susp,Stby-> Off	IRQ4 (COM1)	: Enable
Video Off Method	: V/H	IRQ5 (LPT2)	: Enable
SYNC+Blank		IRQ6 (Floppy Disk)	: Enable
		IRQ7 (LPT1)	: Enable
		IRQ8 (RTC OS2)	: Disable
		IRQ9 (IRQ 2 Redir)	: Enable
		IRQ10 (Reserved)	: Enable
		IRQ11 Reserved	: Enable
		IRQ12 (PS/2 Mouse)	: Enable
		IRQ13 (Coprocessor)	: Enable
		IRQ14 (Hard Disk)	: Enable
		IRQ15 (Reserved)	: Enable
PM Timers			
HDD Power Down	: 10 Min		
Doze Mode	: 1 Min		
Standby Mode	: 5 Min		
Suspend Mode	: 10 Min		
PM Events			
COM Ports Activity	: Enable		
LPT Ports Activity	: Enable		
HDD Ports Activity	: Enable		
PCI/ISA Master Act	: Enable		
IRQ1-15 Activity	: Enable		
Esc	: Quit	↑↓→←	: Select Item
F1	: Help	PU/PD/+/-	: Modify
F5	: Old Values	(Shift) F2	: Color
F6	: Load BIOS Defaults		
F7	: Load Setup Defaults		

Figure 4-5. Power Management Setup Menu

Power Management Timers

The four Power Management timer modes are set by pressing the directional arrow keys (↑↓→←). The four modes are:

- Disable
- Max. Saving
- Min. Saving
- User Define

Disable Mode

This mode disables the power management function; the system will be in the non-green operation mode.

Max. Saving Mode

When you select this mode, you will be presented the system default values of four related timers (HDD power Down Timer at 10 Min; system Doze Timer at 20 Sec; system Standby Timer at 20 Sec, and system Suspend Timer at 20 Sec) to facilitate the minimized power management function.

Min. Saving Mode

When you select this mode, you will be presented the system default values of four related timers (HDD power Down Timer at 10 Min; system Doze Timer at 40 Min; system Standby Timer at 40 Min; and system Suspend at 40 Min) to facilitate the minimized power management function.

User Define

You can define your own required power management delay values by setting up the following four PM timers:

a. HDD Power Down Timer

The entry period of this flexible HDD Off timer is 1 to 15 minutes. Once the system stops reading from or writing to the HDD, the standby timer starts counting. If there is no activity and the defined timeout period expires, the system will shut off the HDD power. The HDD will not resume its function until a read/write command is executed.

b. Doze Timer

The Doze Timer starts counting at the end of each activity. If there is no further activity during the defined period, the timer will scale the CPU and system clock at the lower frequency (8MHz), and motivate the enabled PM Events. When you press any keyboard key or move the mouse, the CPU and system clock will auto-wake-up to a normal operation.

The range of this standby mode timer is 10 seconds to 3 hours.

c. System Standby Timer

The Suspend timer starts counting at the end of each activity. If there's no further activity during the defined period, the system will scale the CPU and system clock at the lower frequency (8MHz) and motivate the enabled PM Events. It will enable the monitor to enter an inactive mode with a blank screen. The monitor will not display again until you press any key or move the mouse.

The range of the Suspend mode timer is 10 seconds to 3 hours.

d. System Suspend Timer

The Suspend timer will be functional only if your system uses the Intel SL-Enhanced series CPU. The Suspend timer starts counting at the end of each activity. If there's no further activity during the defined period, the system will shut off the CPU, HDD, and monitor power to enter the Suspend mode. The power consumption in this mode is even lower than that of the Standby mode.

The range of the Suspend mode timer is 10 seconds to 3 hours.

Power Management Events

Power Management Events include:

- Local Master
- Local Device
- Video Activities
- DMA Activities
- IRQ1 through IRQ15

The IRQ8 (RTC, OS2) default setting is disabled in order to make sure that the Power Management mode can be executed under OS2. You can customize a combination of PM Events by selecting “Enable”, which will be checked whether or not the related function is still working before the respective defined power management mode is asked to be motivated.

PM Control by APM

Yes **No**

If APM (Advanced Power Management) is installed, the system BIOS will wait for APM's prompt before entering any PM mode (Doze, Standby, Suspend, User Defined).

Video Off Option

Always On **Suspend → Off**
 Susp, Stby → Off **All Modes → Off**

Always On: The system BIOS will never turn off the screen.

Suspend Off: Screen will turn off in the Suspend mode.

Susp, Stby Off: Screen will turn off in the Standby or Suspend mode.

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Video Off method

Blank Screen **V/H SYNC+Blank**

Blank: The system BIOS will blank the screen when disabling video.

V/H SYNC+Blank: The system BIOS will only blank the screen and turn off the V/SYNC and H-SYNC signals from the VGA card to the monitor.

A “Green” monitor detects the V/H SYNC signals to turn off its electronic gun.

Suspend Switch

Enabled **Disabled**

Pressing the power saving toggle switch connected to JP2 will cause the screen to go into the Suspended mode immediately.

Doze Speed (div by): 2

During the Doze power saving mode, the CPU frequency will be scaled to 1/2 of normal system frequency.

Standby Speed (div by): 3

During the Standby power saving mode, the CPU frequency will be scaled to 1/3 of normal system frequency.

PCI & Onboard I/O Setup

This section provides information for configuring the PCI and Onboard I/O features. Choose **PCI & Onboard I/O Setup** option from the CMOS Setup Utility to display the menu shown in Figure 4-6.

Set all INT#'s to Auto. All PCI adapters should use INTA. The BIOS will route each INTA to correspond to the IRQ automatically.

ROM PCI/ISA BIOS (2A5IAC31) PCI & ONBOARD I/O SETUP AWARD SOFTWARE, INC.			
Slot 1 Using INT#	: AUTO	Onboard FDC Controller	: Enable
Slot 2 Using INT#	: AUTO	Onboard IDE Controller	: Primary
Slot 3 Using INT#	: AUTO	Onboard Serial Port 1	: COM1
1st Available IRQ	: 10	Onboard Serial Port 2	: COM2
2nd Available IRQ	: 11	COM3 & COM4 Address	: 338H, 238H
3rd Available IRQ	: 9	Onboard Parallel Port	: 278H
4th Available IRQ	: 12	Parallel Port Mode	: Normal
PCI IRQ Activated By	: Edge	Esc : Quit	↑↓→←) : Select Item
PCI IDE IRQ Map To	: ISA	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 4-6. PCI Configuration Setup Menu

Set all INT # to AUTO and all PCI adapters to use INTA. The BIOS will automatically route each INTA to correspond with the IRQ.

The PCI Local Bus specifies four INTD (INTA-D) for each PCI slot. In this board, INTA of slot 1, INTD of slot 2, and INTC of slot 3 will be connected together and be directed to the first available IRQ. Also, the 2nd, 3rd, and 4th available IRQ's are also shared by the INT's of different slots. Most PCI devices will use INTA as their interrupt pins, and choose "AUTO" for the BIOS to automatically assign INT # to different IRQ's. For PCI IDE adapter if you are using IRQ Paddle board, set IRQ=NA. Otherwise, set IRQ=14 or 15.

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Slot 1	Slot 2	Slot 3	
A	D	C	1st Available IRQ
B	A	D	2nd Available IRQ
C	B	A	3rd Available IRQ
D	C	B	4th Available IRQ

PCI IRQ Activated By

Level **Edge**

To tell the chipset if the IRQ signals input is level or edge trigger.

Note: Most PCI controllers use **LEVEL** to activate the PCI IRQ.

PCI IDE IRQ Map To

PCI-AUTO **PCI-SLOT1** **PCI-SLOT2** **PCI-SLOT3** **ISA**

a. PCI AUTO

The BIOS will scan for PCI IDE devices to determine their location and assign IRQ14 as the primary IDE INT #, and IRQ15 for the secondary IDE INT #.

b. PCI-SLOT#

Assign IRQ14 for the primary IDE INT # for the specified slot number.

c. ISA

Some IDE cards connect the IRQ14 and IRQ15 directly from the ISA slot through the card.

Load Setup Defaults

Select the **Load Setup Defaults** option from the CMOS Setup Utility menu to configure the BIOS to load the system defaults directly from CMOS. If the configured setup record created by the Setup program becomes corrupted (and therefore unusable), the system defaults will be loaded automatically when you turn the computer on. When you select the option, you will be prompted to “Load Setup Defaults”. Respond with Y or N as appropriate.

Password Setting

Select the **Password Setting** from the CMOS Setup Utility menu when you want to initially set the password, and when you want to change or delete an existing password. When you use this option to initially set a password, you will be prompted to “Enter Password”. Press **Enter** (this is the ROM default password) and continue to set up the initial password. At other times, the prompt will require the valid password to be entered.

After the ROM password (Enter) or valid password has been entered, you can either accept the existing password, set up a new one, or delete the password entirely. The password can be three to eight digits in length.

Remember that you may need to set the “Security Option” in the BIOS Features menu to either “System” or “Setup” so that the password will be required to run the system, or to access the BIOS setup only.

IDE Hard Disk Auto Detection

This utility automatically detects the IDE hard disk type; use this to confirm your hard disk data when it is unknown. Select the **IDE HDD Auto Detection** from the CMOS Setup Utility menu. Upon detection, the HDD type and peripheral data will be displayed. A prompt will display in the center of the menu for you to accept or disregard the detected drive.

**ROM PCI/ISA BIOS (2A5IAC3)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.**

	CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
Drive C: (124MB)	936	16	65535	935	17	Normal
Drive D: (MB)	0	0	0	0	0	---

Do you accept this drive D (Y/N)?

Select Drive D Option (N=Skip) : N

OPTIONS	SIZE	CYLS	HEADS	PRECOMP	LANDZONE		
SECTORS	MODE						
1(Y)	0	0	0	0	0	0	Normal

ESC : Skip

Figure 4-7. IDE HDD Auto Detection Menu

Hard Disk Low Level Format

This utility is the drive setup software used for low-level format before DOS **FDISK** and **FORMAT** or similar utilities. You can use this utility on MFM encoded hard disk drives if they require formatting but have not been low-level formatted by the manufacturer. IDE, ESDI and SCSI drives do not need this utility; you should not use it on these types of drives.

CAUTION

All options in this utility are destructive to data on a hard disk.

Save and Exit Setup

Select this option from the CMOS Setup Utility after you have completed your BIOS setup and want to save all changes. Press **Enter** after selecting the option and all changes will be written in the CMOS memory of the chipset. The microprocessor will check this data whenever you turn on your system, and compare it to what it finds in the system.

Press **Esc** after selecting this option and you do not want to save & exit. The initial screen will again display for you to select the option of your choice.

Exit Without Saving

Select this option from the CMOS Setup Utility and press **Enter** to exit the Setup program without saving any changes.

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Appendix A

Updating the System BIOS

This appendix provides instructions on how to update the system BIOS using the FLASH ROM BIOS feature, which permits you to update the BIOS without exchanging EPROM chips. Upon receipt of a manufacturer's or dealer's diskette containing the BIOS update data, perform the following to update the BIOS:

1. Turn off power to the computer and open the system case so you can access jumper JP30.
2. Place a jumper cap on JP30 to short pins 1 and 2.
3. Turn on power to the computer.
4. Insert the BIOS data diskette in drive A or B. Make that drive active and type "FLASH" at the DOS command line and press **Enter**<. The following screen will be displayed.

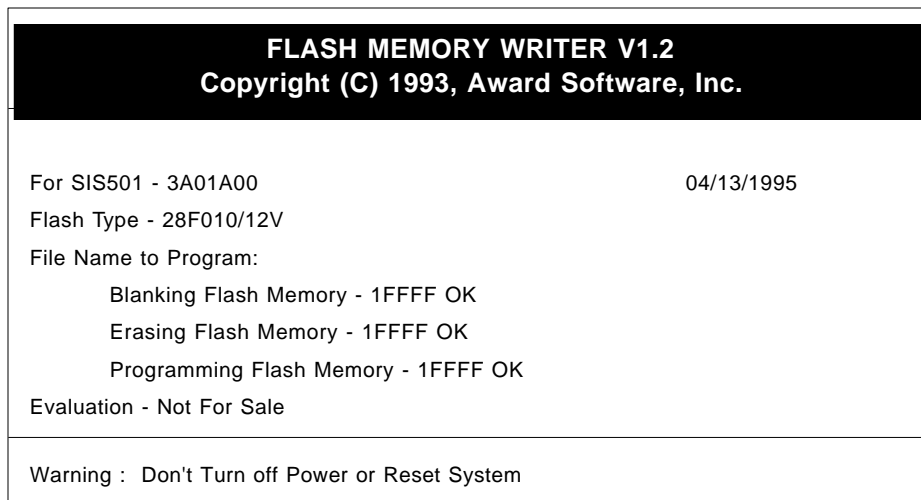
FLASH MEMORY WRITER V1.2 Copyright (c) 1993, Award Software, Inc.	
For SIS501 - 3A01A00	04/13/1995
Flash Type -	
File Name to Program : 5slb1.bin	
Error Message:	

5. Type in the BIOS file name to program, which will be furnished by your dealer when a new BIOS update is released. In the screen above, the file name **5slb1.bin** is shown already typed in. As soon as you enter the file name and press **Enter**, a message

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will appear at the bottom of the screen to prompt if you want to save the (current) BIOS data.

6. Press **Y** if you want to save the previous BIOS to the BIOS data diskette. Press **N** if you do not want to save the previous BIOS data.
7. Remove the jumper cap from JP30 pins 1 and 2 and place the cap across pins 2 and 3 and press **Enter**. A prompt will display the Error Message window to confirm that you want to proceed with the update (“Are you sure to program (Y/N)”)
8. Press **Y** for Yes if you want to continue the BIOS update. Press **N** for No if you want to quit without programming the BIOS update. The following screen will display to show the status of the update routine:



9. Following successful update, the computer will auto-Restart.
10. Power down the computer.
10. Remove the JP30 jumper cap from pins 2 and 3 and place the cap across pins 1 and 2 again. Power up the computer.
11. Enter the CMOS Setup and load setup defaults.

Jumpers and Connectors Quick Reference

I/O PORTS:

- J7: Hard Disk Drive Connector
- J6: Floppy Drive Connector
- J5: Parrell Printer Port
- J4: RS-232-1 (COM1) port
- J3: RS-232-2 (COM2) Port

JP12: HDD Activity LED Connector

Main Memory Slots

J2: Power Supply Connector

J1: Keyboard Connector

JP1: Main Memory Configuration:

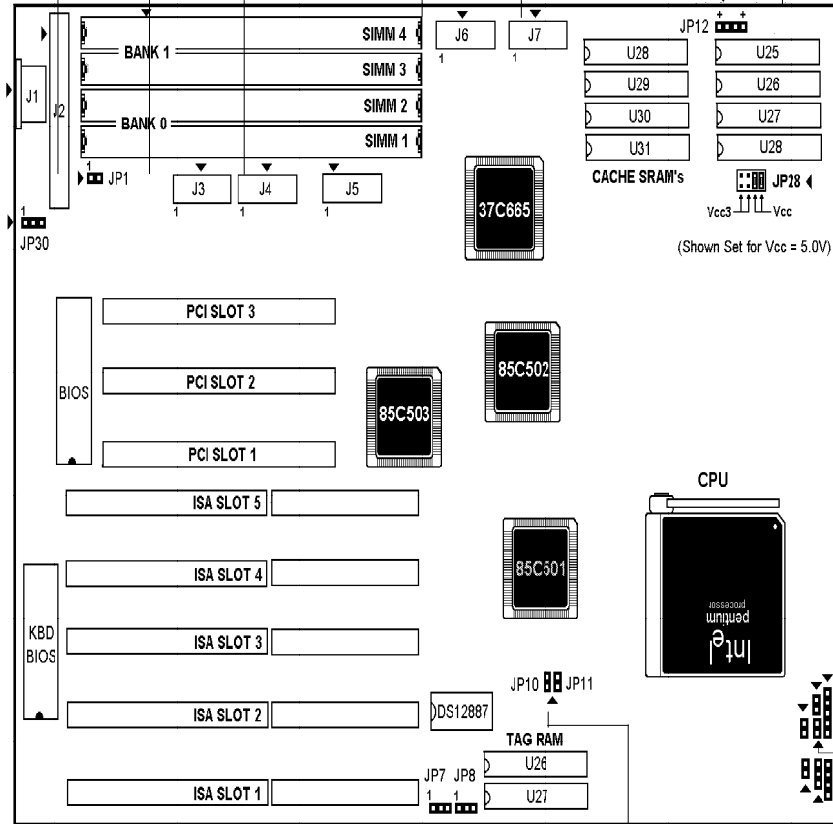
1-2: Bank0 and Bank1 are installed at the same time; Bank0

is dedicated

in single-side SIMM's

2-3: Bank0 and Bank1 are installed at the same time; Bank0 is dedicated

in double-side SIMM's



Cache SRAM's
Vcc3 Vcc
(Shown Set for Vcc = 5.0V)

JP28: Cache SRAM Voltage
Vcc3 = 3.3V (2 jumpers)
Vcc = Mixed voltage, 5V supply, 3.3V output (2 jumpers)

Connectors:

JP2: Power Saving Green Switch

JP21: Reserved

JP23: Turbo LED

JP26: External Speaker

JP25: Turbo Switch

JP24: System Reset Switch

Cache Size Selection (JP7, JP8)

	256KB	512KB	1MB
JP7	1-2	2-3	2-3

System Clock Speed (JP10, JP11)

	75MHz	90MHz	100MHz
JP10	Open	Open	Short

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PCB Revision