

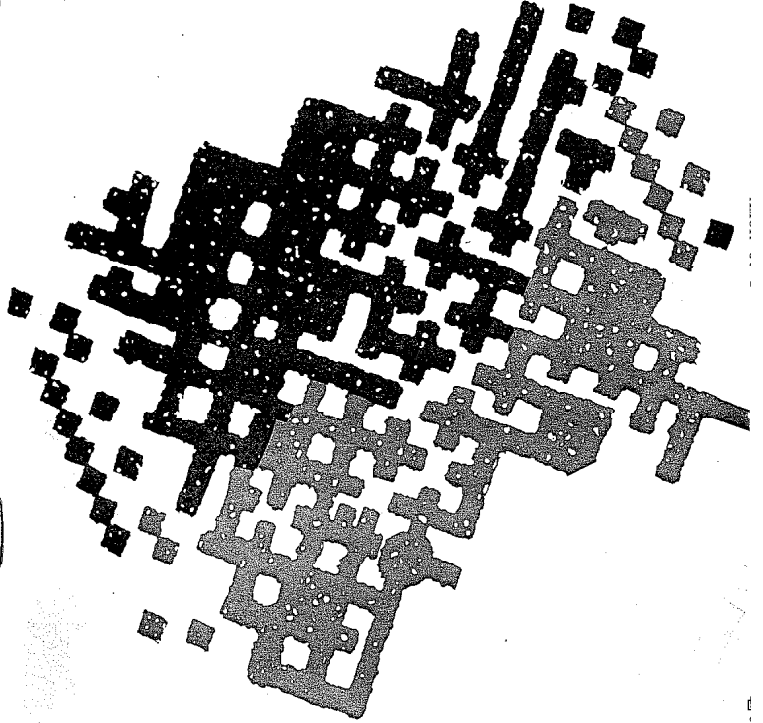
USER'S MANUAL

PH5 PCI MAIN BOARD

Rev 1.3



Recycled Papers



Part Number: MN-075-B12-01



Features

- 32-bit data path (132 MB/s peak transfer)
- Concurrency with processor/memory
- Synchronous bus operating at up to 33 MHz
- Auto configuration support for PCI Local Bus add-on boards
- Processor independence
- Multi-master capability
- Parity on both data and address lines

PCI Local Bus introduction

Graphics-oriented operating systems such as Windows and OS/2 have created a data bottleneck between the processor and its display peripherals in standard PC I/O architectures. Moving peripheral functions with high bandwidth requirements closer to the system's processor bus can eliminate this bottleneck. Substantial performance gains are seen with Graphical User Interfaces (GUIs) and other high bandwidth functions (i.e., full motion video, SCSI, LANs, etc.) when a "local bus" design is used.

The advantages offered by local bus designs have motivated several versions of local bus implementations. The benefits of establishing an open standard for system I/O buses have been clearly demonstrated in the PC industry. It is important that a new standard for local buses be established to simplify designs, reduce costs, and increase the selection of local bus components and add-on cards.

The PCI Local Bus, a high performance, 32-bit or 64-bit bus with multiplexed address and data lines, has been defined with the primary goal of establishing an industry standard, high performance local bus architecture that offers low cost and allows differentiation. It is intended for use as an interconnect mechanism between highly integrated peripheral controller components, peripheral add-on board, and processor/memory systems.

Chapter 3

Installation

3.1 Installation of DRAMs

The AB-PH5 baseboard provides four 72-pin SIMM sites for memory expansion. The sockets support 1M x 32 (4MB), 2M x 32 (8MB), 4M x 32 (16MB), and 8M x 32 (32MB) single-side or double-side SIMM modules. Minimum memory size is 2 MB and maximum memory size, using four 8M x 32 SIMM modules, is 128MB.

There are two banks of Memory (Bank0 to Bank1) on the system board. Each bank consists of two 72pin SIMM sockets.

Table 1-1 shows the possible memory combinations. The AB-PH5 will support both Fast Page DRAM or EDO DRAM SIMMs, but they cannot be mixed within the same memory bank. If Fast Page DRAM and EDO DRAM SIMMs are installed in separate banks, each bank will be optimized for maximum performance. Parity generation and detection is NOT supported. SIMM requirements are 70ns Fast Page Mode or 60ns EDO DRAM with tin-lead connectors.

3.2 Installation of Cache memory

Various types of SRAM can be used to implement the level-2 cache for Pentium processor motherboards. Asynchronous SRAM, standard burst SRAM, and pipelined burst SRAM are three examples.

(a) Asynchronous SRAM (on-board SRAM)

This mainboard supports very flexible Cache SRAM configuration: 256KB, 512KB.

Main Board Cache Size	256KB	512KB	
Jumper setting	JP3	1-2	2-3
	JP2	1-2	1-2
TAG SRAM	Location	U2	
	Type	8Kx8/16Kx8	16Kx8/32Kx8
Data SRAM	Location	U3-U10	U3-U10
	Type	32Kx8	64Kx8

(b) Pipelined burst SRAM & Standard burst SRAM (L2 cache module)

L2 cache module cache size	Depend on module		
L2 cache module cache type	Asynchronous SRAM	Burst/Pipeline Burst SRAM	
Jumper setting	JP2	1-2	2-3
	JP3	1-2	1-2

Warning! Please remove all async. SRAM on U2-U10 before plug in L2 cache module.

Bank1		Bank0		Total
SIMM4	SIMM3	SIMM2	SIMM1	
Empty	Empty	Empty	1Mx32 (4MB)	4MB
Empty	Empty	Empty	2Mx32 (8MB)	8MB
Empty	Empty	Empty	4M x 32 (16MB)	16MB
Empty	Empty	Empty	8Mx32 (32MB)	32MB
Empty	Empty	256Kx32 (1MB)	256K x 32 (1MB)	2MB
Empty	Empty	1M x 32 (4MB)	1Mx32 (4MB)	8MB
Empty	Empty	2Mx32 (8MB)	2M x 32 (8MB)	16MB
Empty	Empty	4Mx32 (16MB)	4M x 32 (16MB)	32MB
Empty	Empty	8Mx32 (32MB)	8M x 32 (32MB)	64MB
256Kx32 (1MB)	256Kx32 (1MB)	Empty	Empty	2MB
256Kx32 (1MB)	256Kx32 (1MB)	256Kx32 (1MB)	256Kx32 (1MB)	4MB
256Kx32 (1MB)	256Kx32 (1MB)	1Mx32 (4MB)	1Mx32 (4MB)	10MB
256Kx32 (1MB)	256Kx32 (1MB)	2Mx32 (8MB)	2Mx32 (8MB)	18MB
256Kx32 (1MB)	256Kx32 (1MB)	4Mx32 (16MB)	4Mx32 (16MB)	34MB
256Kx32 (1MB)	256Kx32 (1MB)	8Mx32 (32MB)	8Mx32 (32MB)	66MB
1M x 32 (4MB)	1Mx32 (4MB)	Empty	Empty	8MB
1M x 32 (4MB)	1Mx32 (4MB)	256Kx32 (1MB)	256Kx32 (1MB)	10MB
1M x 32 (4MB)	1Mx32 (4MB)	1Mx32 (4MB)	1M x 32 (4MB)	16MB
1M x 32 (4MB)	1Mx32 (4MB)	2Mx32 (8MB)	2M x 32 (8MB)	24MB
1M x 32 (4MB)	1Mx32 (4MB)	4Mx32 (16MB)	4M x 32 (16MB)	40MB
1M x 32 (4MB)	1Mx32 (4MB)	8Mx32 (32MB)	8M x 32 (32MB)	72MB
2M x 32 (8MB)	2Mx32 (8MB)	Empty	Empty	16MB
2M x 32 (8MB)	2Mx32 (8MB)	256Kx32 (1MB)	256Kx32 (1MB)	18MB
2M x 32 (8MB)	2Mx32 (8MB)	1Mx32 (4MB)	1M x 32 (4MB)	24MB
2M x 32 (8MB)	2Mx32 (8MB)	2Mx32 (8MB)	2M x 32 (8MB)	32MB
2M x 32 (8MB)	2Mx32 (8MB)	4Mx32 (16MB)	4M x 32 (16MB)	48MB
2M x 32 (8MB)	2Mx32 (8MB)	8Mx32 (32MB)	8M x 32 (32MB)	80MB
4M x 32 (16MB)	4Mx32 (16MB)	Empty	Empty	32MB
4M x 32 (16MB)	4Mx32 (16MB)	256Kx32 (1MB)	256Kx32 (1MB)	34MB
4M x 32 (16MB)	4Mx32 (16MB)	1Mx32 (4MB)	1M x 32 (4MB)	40MB
4M x 32 (16MB)	4Mx32 (16MB)	2Mx32 (8MB)	2M x 32 (8MB)	48MB
4M x 32 (16MB)	4Mx32 (16MB)	4Mx32 (16MB)	4M x 32 (16MB)	64MB
4M x 32 (16MB)	4Mx32 (16MB)	8Mx32 (32MB)	8M x 32 (32MB)	96MB
8M x 32 (32MB)	8Mx32 (32MB)	Empty	Empty	64MB
8M x 32 (32MB)	8Mx32 (32MB)	256Kx32 (1MB)	256Kx32 (1MB)	66MB
8M x 32 (32MB)	8Mx32 (32MB)	1Mx32 (4MB)	1M x 32 (4MB)	72MB
8M x 32 (32MB)	8Mx32 (32MB)	2Mx32 (8MB)	2M x 32 (8MB)	80MB
8M x 32 (32MB)	8Mx32 (32MB)	4Mx32 (16MB)	4M x 32 (16MB)	96MB
8M x 32 (32MB)	8Mx32 (32MB)	8Mx32 (32MB)	8M x 32 (32MB)	128MB

Table 1-1

3.3 CPU frequency selection

3.3.1 Intel CPU

CPU Type	Bus speed	JP15A			JP15C	
		1-2	3-4	5-6	1-2	3-4
P75	50 MHz	OFF	ON	ON	OFF	OFF
P90	60 MHz	ON	OFF	ON	OFF	OFF
P100	66 MHz	ON	ON	ON	OFF	OFF
P120	60 MHz	ON	OFF	ON	ON	OFF
P133	66 MHz	ON	ON	ON	ON	OFF
P150	60 MHz	ON	OFF	ON	ON	ON
P166	66 MHz	ON	ON	ON	ON	ON
P180	60 MHz	ON	OFF	ON	OFF	ON
P200	66 MHz	ON	ON	ON	OFF	ON

3.3.2 AMD 5k86 CPU

CPU Type	Bus speed	JP15A			JP15C	
		1-2	3-4	5-6	1-2	3-4
P75 (SSA/5)	50 MHz	OFF	ON	ON	OFF	OFF
P75 (SSA/5)	66 MHz	ON	ON	ON	ON	OFF
P90 (SSA/5)	60 MHz	ON	OFF	ON	OFF	OFF
P100 (SSA/5)	66 MHz	ON	ON	ON	OFF	OFF
P100 (K5)	50 MHz	OFF	ON	ON	OFF	OFF
P120 (K5)	60 MHz	ON	OFF	ON	OFF	OFF
P133 (K5)	66 MHz	ON	ON	ON	OFF	OFF
P150 (K5)	60 MHz	ON	OFF	ON	ON	OFF
P166 (K5)	66 MHz	ON	ON	ON	ON	OFF

3.3.3 Cyrix 6x86 CPU

CPU Type	Bus speed	JP15A			JP15C	
		1-2	3-4	5-6	1-2	3-4
P100+	40 MHz	OFF	ON	OFF	ON	OFF
P120+	50 MHz	OFF	ON	ON	ON	OFF
P150+	60 MHz	ON	OFF	ON	ON	OFF
P166+	66 MHz	ON	ON	ON	ON	OFF

3.4 Quick reference for installation

- Step 1. Please verify the following jumpers:
- JP33: A jumper at pin "1-2" for CMOS RAM normal operation.
 - JP15A, JP15C :
Make sure the jumper settings are consistent with the installed CPU. (refer section 3.3)
- Step 2. Connect the keyboard to J3.
- Step 3. Plug at least 1 DRAM modules into the SIMM stating with SIMM1, or 2 DRAM modules into the SIMM stating with SIMM1, SIMM2 (Bank 0).
- Step 4. Verify the cache size selection jumper JP2, JP3 (refer section 3.2).
- Step 5. Make the following connectors to your case:
- J15(19, 20 Pin) to H/W reset button.
 - J15(7-10 Pin) to speaker.
 - J15(12, 13 Pin) to turbo LED, the LED will light up.
 - J15(1-5 Pin) to keylock.
- Step 6. Connect IDE cable to IDE1.
- Step 7. Connect floppy cable to FDC.
- Step 8. Connect COM1, COM2, LPT, PS/2 Mouse on the mainboard.
- Step 9. Plug in the display card into slot.
- Step 10. Connect J1 to P8 and P9 of the power supply.
- Step 11. Power on.
- Step 12. Enter the "Setup Menu" screen. Select the display type and drive type.
- Step 13. Quit the "Setup Menu" screen and then select "SAVE & EXIT SETUP" from BIOS Main Menu.

- Step 14. The system will re-boot.
- Step 15. If DOS prompt appears on the screen, installation is complete.

Note: If you have any problems during installation, please refer to page 2-2 for the detailed description of jumper settings and connectors.

Chapter 4

Award BIOS Setup

All personal computer use a BIOS, or Basic Input/Output system, to provide control for the hardware functions. When system is powered on or reset, the CPU is reset and BIOS will do the following:

- Self-test on CPU.
- Verify ROM BIOS checksum.
- Verify CMOS configuration chip.
- Initialize timer.
- Initialize DMA controller.
- Verify system memory and cache memory.
- Install all BIOS function call utilities.
- Verify/initialize all system configurations, like keyboard, floppy drive, hard disk, initialize EGA or VGA if there is any.
- Hook to the add-in BIOS (include NCR PCI SCSI BIOS) or expansion BIOS to perform initialization and driver link to the system.

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that the setup information is retained when the power is turned off. When the system is powered on or reset, the Award BIOS will display a copyright message on the screen, then the BIOS will perform the system diagnostics test and initialization. When all of the above tests have been passed, the message:

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

is displayed. If the [Del] key or Ctrl-Alt-Esc is pressed, the screen will be cleared and then the following message will be shown:

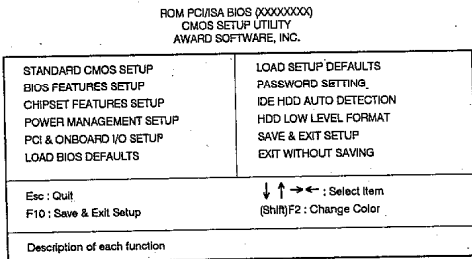


Figure 4-1 Main Menu

4.1 Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes none, one, or more than one setup items. 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.

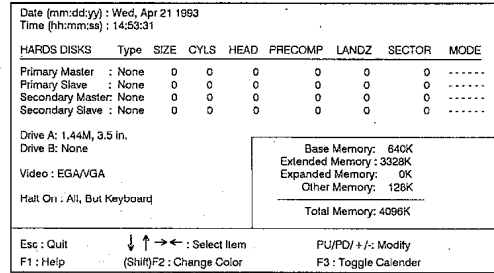


Figure 4-2 Standard CMOS Setup Menu

The setup program is completely menu-driven:

1. Use arrow keys to select entry of **Date, Time, Hard Disk, Floppy, Display and Keyboard.**
2. Use **PgUp/PgDn** key to modify the options of each entry.
3. Use **Esc** to exit.

4.1.1 Hard Disk size selection

The Award BIOS supports three HDD modes: **NORMAL, LBA, and LARGE.**

NORMAL mode: Generic access mode in which neither the BIOS nor the IDE controller will make any transformation during accessing. The maximum HDD size supported by the **NORMAL** mode is 528 Megabytes.

LBA mode: Logical Block Addressing mode is a new HDD accessing method designed to overcome the 528 Megabytes limitation. The number of cylinders, heads, and sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing the IDE controller will transform the logical address described by cylinder, head, and sector number into its own physical address inside the HDD. The maximum HDD size supported by the LBA mode is 8.4 Gigabytes.

LARGE mode: Some IDE HDDs contain more than 1024 cylinders without LBA support. This access mode tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. The maximum HDD size supported by LARGE mode is 1 Gigabyte.

4.2 BIOS Features Setup Menu

The BIOS Features setup program is equipped with a series of help screens accessed by the <F1> key, which will display the available options for a particular configuration feature and special help for some of the options. If you don't really understand the meanings of each item, please don't change the following default values.

ROM PC/ISA BIOS (XXXXXXXX)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power on Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A, C	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On		
Typeomatic Rate Setting	: Enabled		
Typeomatic Rate (Chars/Sec)	: 30		
Typeomatic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled		

Esc : Quit ↑ ↓ ← → : Select Item
 F1 : Help F10/Del : Modify
 F5 : Old Values (Shift)F2 : Color
 F8 : Load BIOS Defaults
 F7 : Load Setup Defaults

Figure 4-3 BIOS Feature Setup

A short description of screen items follows:

- Virus Warning** Enable this option and a warning message appears when there is any attempt to access the boot sector or hard disk partition table.
- CPU Internal Cache** This option enables/disables the CPU's internal cache. (The Default setting is Enabled.)
- External Cache** This option enables/disables the external cache memory. (The Default setting is Enabled.)
- Quick Power On Self Test** Enabled provides a fast POST at boot-up

- Boot Sequence** The default setting attempts to first boot from drive A: and then from hard disk C:. You can reverse this sequence with "C: A:", but then drive A: cannot boot directly.

- Swap Floppy Drive** Enabled changes the sequence of the A: and B: drives. (The Default setting is Disabled.)

- Boot Up Floppy Seek** Enable this item and the BIOS searches for installed floppy disk drives to determine if they are 40 tracks (360K drive) or 80 tracks (720K, 1.2M, 1.44M, or 2.88MB drives). Disable this item and the BIOS does not search for floppy drive type by track number.

- Boot Up Num Lock Status** Choose On or Off. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.

- Typematic Rate Setting** Enable this option to adjust the keystroke repeat rate.

- Typematic Rate (Chars/Sec)** Choose the rate a Character keeps repeating.

- Typematic Delay (Msec)** Choose how long after you press a key that a character begins repeating.

- Security Option** Choose Setup or System. Use this feature to prevent unauthorized system boot-up or use of BIOS Setup.

 "System" - Each time the system is booted the password prompt appears.
 "Setup" - If a password is set, the password prompt only appears if you attempt to enter the Setup program.

- PCI/VGA Palette Snoop** Choose Enable or Disable. Used to alter VGA palette setting while graphics pass through feature connector of PCI VGA card and processed by MPEG card.

- Video or Adaptor BIOS Shadow** BIOS shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM.

4.3 Chipset Features Setup Menu

The Chipset Features Setup option changes the values of the chipset registers. These registers control system options in the computer.

Caution: Do not change the default values shown below unless you are familiar with the mainboard's chipset.

Run the Chipset Features Setup as follows.

1. Choose "CHIPSET FEATURES SETUP" from the Main Menu and the following screen appears.

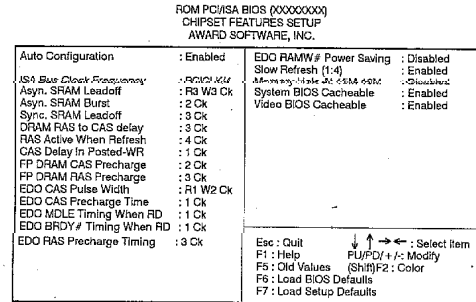


Figure 4-4 Chipset Feature Setup Menu

Note:

- Memory Hole At 15M-16M** Choose Enable or Disable (Default). Used to reserved memory addressing space for some special add-on-card that requires 1M byte addressing space from 15M to 16M.

- 2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/ +/- keys.

- 3. After you have finished with the Chipset Features Setup, press the <ESC> key and follow the screen instructions to save or disregard your new settings.

4.4 Power Management Setup

The Power Management Setup option lets you set the system's power saving functions.

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of items appears.

ROM PCI/ISA BIOS (XXXXXXXX)			
CMOS SETUP UTILITY			
POWER MANAGEMENT SETUP			
Power Management	: Disable	IRQ 3 (COM 2)	: Enable
PM Control by APM	: No	IRQ 4 (COM 1)	: Enable
Video Off Option	: Always On	IRQ 5 (Reserved)	: Enable
Video Off Method	: V/H SYNC + Blank	IRQ 6 (Floppy Disk)	: Enable
** PM Timers **			
HDD Power Down	: Disable	IRQ 7 (LPT 1)	: Enable
Doze Mode	: Disable	IRQ 8 (RTC Alarm)	: Disable
Standby Mode	: Disable	IRQ 9 (IRQ2 Redir)	: Enable
Suspend Mode	: Disable	IRQ 10 (Reserved)	: Enable
** PM Events **			
COM Ports Activity	: Enable	IRQ 11 (Reserved)	: Enable
LPT Ports Activity	: Enable	IRQ 12 (PS/2 Mouse)	: Enable
HDD Ports Activity	: Enable	IRQ 13 (Coprocessor)	: Enable
PCI/ISA Master Act.	: Enable	IRQ 14 (IDE-1)	: Enable
VGA Activity	: Disable	IRQ 15 (IDE-2)	: 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

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/ +/- keys.

A short description of selected screen items follows:

Power Management	Options are as follows:
User Define	You define HDD and system power down times.
Disabled	Disables the Green PC Features. (Default)
Min Saving	Doze = 40 Min Standby = 40 Min Suspend = 40 Min
Max Saving	Doze = 20 Sec Standby = 20 Sec Suspend = 20 Sec

PM Control by APM Choose No (Default) or Yes. APM stands for Advanced Power Management. "Yes" makes your power management more flexible.

Video Off Option Choose "Always On" (Default), "All Modes -- Off" (Suspend, Standby and Doze mode), "Susp, Stby -- Off". This item shuts the video off when entering Doze mode, Standby mode or Suspend mode.

Video Off Method Choose DPMS, Blank screen, or V/H Sync + Blank (Default). With this item V/H SYNC is controlled by software. If you have a VGA card that is not compatible with the default option, switch to "Blank screen", even though it consumes more power than "V/H SYNC + Blank". If your VGA card and VGA monitor support VESA DPMS, switch the option to "DPMS".

HDD Power Down Choose a time interval from 1 to 15 minutes or "Disabled" (Default). When the set time has elapsed, the BIOS sends a command to the HDD to enter idle (sleep) mode, turning off the motor. *This function is only valid for IDE HDDs that support power saving function.*

Doze Mode The default setting is Disabled. When the Power Management item is switched to "User Define" you can select a time interval from 20 sec to 40 min. When the set time elapses without activity the system enters Doze mode.

If the idle time for all PM events — COM Ports Activity, LPT Ports Activity, HDD Ports Activity, PCI/ISA Master Act., and VGA Activity — is greater than the Doze time you set the system will enter Doze mode, and the CPU speed slows down. If the Video Off Option is set to "All Modes -- Off", the screen shuts off.

- Standby Mode** The default setting is Disabled. When the Power Management item is switched to "User Define" you can select a time interval from 20 sec to 40 min. When the set time elapses without activity the system enters Standby mode.
- If the idle time for all PM events is greater than the Standby time you set the system will enter Standby mode, and the CPU speed slows down, and SM Out changes to low. If the "Video Off Option" is set to "Sus, Stby—Off", the screen will shut off.
- Suspend Mode** The default setting is Disabled. When the Power Management item is switched to "User Define" you can select a time interval from 20 sec to 40 min. When the set time elapses without activity the system enters Suspend mode.
- If the idle time for all PM events is greater than the Suspend time you set the system will enter Suspend mode, and the CPU Internal frequency drops to 0 MHz, and SM Out changes to low. If the "Video Off Option" is set to "Suspend—Off", the screen will shut off.
- About SM Out, please refer to the hardware jumper description.
- PM Events** There are several Power Management events can be selected -- COM Ports Activity, LPT Ports Activity, HDD Ports Activity, PCI/ISA Master Activity, VGA Activity, IRQ1-15 Activity.
- "Enable" - Reset green timer whenever PM Events Activity.
- "Disable" - Discard any PM Events Activity and continuously accumulate timer count down for green function.
- IRQn** "Enable" - Wake up the system when IRQn signal received in the green mode.
- "Disable" - IRQn signal does not wake up the system, when the system is in the green mode.

3. After you have finished with the Power Management Setup, press the <ESC> key to return to the Main Menu.

4.5 PCI & Onboard I/O Setup

The PCI & Onboard I/O Setup option lets you assign INT#s, IRQs, and other hardware settings to the mainboard's PCI slots.

ROM PCI/ISA BIOS (XXXXXXXX)
PCI & ONBOARD I/O SETUP
AWARD SOFTWARE, INC.

PnP BIOS Auto-Config	: Disabled	CPU-PCI Post Write Rate	: 3 Ck
PCI IRQ Activated By	: Level	Latency for CPU-PCI	: 1 Ck
1st Available IRQ	: 10	CPU-PCI Burst Mem Write	: Enabled
2nd Available IRQ	: 11	CPU-PCI Fast Mem Write	: Enabled
3rd Available IRQ	: 9	IDE HDD Block Mode	: Enabled
4th Available IRQ	: 5	Onboard IDE Controller	: Both
PCI IDE 2nd Channel	: Enable	IDE Prefetching	: Disabled
PCI IDE IRQ Map To	: PCI-AUTO	IDE Burst Mode	: Disabled
Primary IDE INT#	: A	IDE Post Write	: Disabled
Secondary IDE INT#	: B	IDE-1 Master PIO Mode	: Auto
Onboard FDC Controller	: Enabled	IDE-1 Slave PIO Mode	: Auto
Onboard Serial Port 1	: COM1/3F8	IDE-2 Master PIO Mode	: Auto
Onboard Serial Port 2	: COM2/2F8	IDE-2 Slave PIO Mode	: Auto
Onboard Parallel Port	: 378h		
Parallel Port Mode	: Normal		

Esc: Quit ↓ ↑ ← →: Select Item.
F1: Help F1/F2/+/=: Modify
F5: Cld Values (Shift)F2: Color
F6: Load BIOS Defaults
F7: Load Setup Defaults

Figure 4-6 PCI & Onboard I/O Setup Menu

- PnP BIOS Auto-Config** Choose Enabled or Disabled (Default). If Enabled the BIOS will automatically assigns IRQ to the PCI INT#. If Disabled the PCI INT# will be assigned by the next setup item - "Xth Available IRQ".
- Xth Available IRQ** This category select a IRQ for INT#. There are ten IRQ selections (3, 4, 5, 7, 9, 10, 11, 12, 14, 15) for available IRQs.
1st Available IRQ means BIOS will assign this IRQ to first INT found on the PCI slots (the assignment sequence is slot1, 2, 3, 4).
- PCI IDE 2nd Channel** Choose Disable or Enable (Default). If the 2nd channel is not used on the PCI IDE card, switch the option to "Disable". Or IRQ15 can not work on the ISA slots.
- PCI IDE IRQ Map to** PCI-Auto:
If the BIOS can detect PCI IDE on one of the PCI slots, then the appropriate INT# will be auto-assigned to IRQ14.

PCI-slotX:

If the BIOS can not detect a PCI IDE card, (because the PCI IDE card does not support this function) the user needs to manually select the PCI-slot occupied by the PCI IDE card.

Primary IDE INT#, Secondary IDE INT#:

If the IDE card supports 2 IDE channels, the BIOS needs to assign 2 INT channels for the IDE card. (Don't select same INT#)

ISA:

This setting assigns no IRQs to the PCI slots. Use this setting with PCI IDE cards that connect IRQ14 and IRQ15 directly from an ISA slot using a cable from a legacy paddleboard.

Note: M/B PCI Slot INT# hardware is designed as below:

- "Slot1-INT#A", "Slot2-INT#D", "Slot3-INT#C" and "Slot4-INT#B" are assigned to the same IRQ. (Do not use them at the same time.)
- "Slot1-INT#B", "Slot2-INT#A", "Slot3-INT#D" and "Slot4-INT#C" are assigned to the same IRQ. (Do not use them at the same time.)
- "Slot1-INT#C", "Slot2-INT#B", "Slot3-INT#A" and "Slot4-INT#D" are assigned to the same IRQ. (Do not use them at the same time.)
- "Slot1-INT#D", "Slot2-INT#C", "Slot3-INT#B" and "Slot4-INT#A" are assigned to the same IRQ. (Do not use them at the same time.)

- Onboard FDD Controller** This option enables or disables the on-board floppy disk controller.
- Onboard Serial Port 1** Choose Disable, COM3/3E8h, or COM1/3F8h (Default) to set the on-board serial port 1, and the interrupt map to IRQ4.
- Onboard Serial Port 2** Choose Disable, COM4/2E8h, or COM2/2F8h (Default) to set the on-board serial port 2, and the interrupt map to IRQ3.
- Onboard Parallel Port** Choose Disable, 3BCh, 278h, or 378h (Default) to set the on-board parallel port, and the interrupt map to IRQ7.

Parallel Port Mode	Choose EPP, ECP, ECP + EPP, or Normal (Default) mode. ECP Mode used DMA channel 3.
Onboard IDE Controller	This option enables or disables the one board PCI IDE controller.
Onboard IDE PIO Mode	Choose Mode 0~Mode 4, or Auto (Default) to change IDE HDD data transfers speed.

4.6 Load BIOS Defaults

BIOS Defaults indicates the values required by the system for the *minimum* performance. Choose this item and the following message appears:

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

To use the BIOS defaults, change the prompt to "Y" and press <Enter>.

4.7 Load Setup Defaults

Setup Defaults indicates the values of system parameters which will give *maximum* performance. Choose this item and the following message appears:

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

To use the SETUP defaults, change the prompt to "Y" and press <Enter>.

4.8 Setting Password

This Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose "PASSWORD SETTING" in the Main Menu and press <Enter>. The following message appears:

"Enter Password:"

2. Enter a password and press <Enter>.

(If you do not wish to use the password function, you can just press <Enter> and a "Password disabled" message appears.)

3. After you enter your password, the following message appears prompting you to confirm the new password:

"Confirm Password:"

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

Important: If you forget or lose the password, the only way to access the system is to set the CMOS RAM discharge jumper to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.

4.9 IDE HDD Auto Detection

This Main Menu item automatically detects the hard disk type and configures the STANDARD CMOS SETUP accordingly.

4.10 HDD Low Level Format

This Main Menu item can preformat IDE Hard Disk and all data on the HDD will be destroyed. Before you preformat IDE Hard Disk, must change HDD Mode to "Normal!"

4.11 Standard types of hard disks

Type	Size	Cylinders	Heads	W. Pcomp	L- Zone	Sect
1	10MB	306	4	128	305	17
2	20MB	615	4	300	615	17
3	30MB	615	6	300	615	17
4	62MB	940	8	512	940	17
5	81MB	977	10	65535	977	17
6	122MB	919	16	65535	919	17
7	163MB	1011	15	65535	1011	22
8	258MB	944	14	65535	944	40
9	201MB	723	15	65535	723	38
10	20MB	820	3	65535	820	17
11	35MB	855	5	65535	855	17
12	49MB	855	7	65535	855	17
13	20MB	306	8	128	319	17
14	42MB	733	7	65535	733	17
16	20MB	612	4	0000	663	17
17	40MB	977	5	300	977	17
18	56MB	977	7	65535	977	17
19	59MB	1024	7	512	1023	17
20	30MB	733	5	300	732	17
21	42MB	733	7	300	732	17
22	30MB	733	5	300	733	17
23	10MB	306	4	0000	336	17
24	53MB	925	7	0000	925	17
25	69MB	925	9	65535	925	17
26	43MB	754	7	754	754	17
27	68MB	754	11	65535	754	17
28	40MB	699	7	256	699	17
29	68MB	823	10	65535	823	17
30	53MB	918	7	918	918	17
31	93MB	1024	11	65535	1024	17
32	127MB	1024	15	65535	1024	17
33	42MB	1024	5	1024	1024	17
34	10MB	612	2	128	612	17
35	78MB	1024	9	65535	1024	17
36	68MB	1024	8	512	1024	17
37	40MB	615	8	128	615	17
38	24MB	987	3	987	987	17
39	57MB	987	7	987	987	17
40	40MB	820	6	820	820	17
41	40MB	977	5	977	977	17
42	40MB	981	5	981	981	17
43	48MB	830	7	512	830	17
44	68MB	830	10	65535	830	17
45	114MB	917	15	65535	918	17
46	152MB	1224	15	65535	1223	17

Chapter 5

IDE Device Driver installation

Improving HDD interface performance with various enhanced IDE PIO and DMA mode requires that both HDD and installed software driver support the PIO and Master mode specified.

To support enhanced IDE, specific driver must be installed for various operating system to transfer data in enhanced mode. Installation procedure described as follow.

Before enhanced PIO mode can be applied, IDE BLOCK MODE should be verified to be supported by HDD. In case HDD capability supporting IDE BLOCK MODE can not be certain, this option should be disabled by BIOS setup utility.

5.1 For Windows, MSDOS and Netware drivers

To install enhanced IDE device driver for WINDOWS, MSDOS and Netware, please insert the released diskette into your floppy drive and run program : A:install

The following messages will show on screen :

```

IDE DEVICE DRIVER INSTALL UTILITY
Copyright (C) Silicon Integrated System Corp. 1995.
All Rights Reserved.

Current Setup Information : IO Port = 1F0. IRQ Line = 14.
Format Utility  Install Driver  Un-Install Driver  Setup  DOS shell

Install DOS IDE Device Driver.
Install OS/2 2.x-3.x IDE Device Driver.
Install Netware 3.11 IDE Device Driver
Install Netware 3.12-4.x IDE Device Driver
Install Windows 3.1 IDE Device Driver
Install Windows NT 3.x IDE Device Driver
Install SCO Unix Device Driver
Install Windows 95 Device Driver
    
```

Move the cursor to the item "install driver" then select the corresponding device driver for your system.

5.2 For Windows NT

To install device driver WINDOWS NT ..

- 1) From the Options menu in "Windows NT setup", choose "Add/Remove SCSI Adapters.
- 2) In the SCSI Adapter Setup dialog box, choose the "Add" button
- 3) In the "Adapter:" list dialog box, choose "Other (Requires a disk from a hardware manufacturer)"
- 4) Next, you will see the "Insert Diskette" dialog box, insert the SIS driver disk into Drive A: and type
 "A:NT31" (for Windows NT 3.1)
 "A:NT35" (for Windows NT 3.5)
 into dialog box.
- 5) Next, In "Select OEM Option" dialog box, choose "SIS 32-Bit Local Bus IDE Adapter" and click "OK."
- 6) In the "Select SCSI Adapter Option" dialog box, click on the "Install" button in the dialog box.
- 7) Installation is successful if the "SCSI Adapter Setup" dialog box reappear, and "SIS 32-Bit Local Bus IDE Adapter" will be listed as an installed driver.
- 8) Reboot your system.

5.3 For OS/2

To install device driver OS/2 ...

- 1) Activate "OS/2 SYSTEM" windows from desktop.
- 2) Select "SYSTEM SETUP" program in "OS/2 SYSTEM" windows.
- 3) Choose "DEVICE DRIVER INSTALL".
- 4) Insert floppy diskette carrying device driver.
- 5) Change source Directory to A:\OS2.
- 6) Start installation by activating "INSTALL" button.
- 7) Select "OK" to confirm your selection.

5.4 For SCO UNIX

5.4.1 Installing SCO UNIX 3.2.x Device Driver for SiS IDE adapter

First, install SCO UNIX 3.2.4.x or SCO Open Desktop 2.x. Using the default SCO IDE driver.

- 1) Boot your SCO UNIX system and bring it into single-user mode.
- 2) Use doscp command to copy the file sis.tar to your /tmp directory. e.g. if you are using floppy drive A, type
 doscp a:sis.tar /tmp.
- 3) Have a SCO UNIX-formatted diskette ready.
- 4) From root, type the following commands
 mkdir /sis
 cd /sis
 tar xvf /tmp/sis.tar.
- 5) Now, insert the diskette into the drive and issue the following command
 tar cvf /dev/(your floppy drive 0 device name).
 Your floppy drive 0 device name could be:
 rfd096ds15 - 5.25 DSHD
 rfd0135ds18 - 3.5 DSHD
 rfd048ds9 - 5.25 DSHD
 rfd0135ds9 - 3.5 DSHD
- 6) You are now ready to install the driver package for SiS IDE Driver. Start the installation by typing
 Custom
- 7) Follow the instruction to install the SiS IDE Driver to system. The new kernel will be built and the original kernel will be renamed to unix.old
- 8) Reboot your system for the new kernel to take effect. The new kernel should initialize the chip to the new timing setting.

5.5 For Windows 95

- 1) Double click the "My Computer" icon on the Desktop.
- 2) Double click the "Control Panel" icon in "My Computer".
- 3) Double click the "System" icon in "Control Panel".
- 4) Select "Device Manager" option in "System Properties".
- 5) Double click "Hard Disk Controller".

- 6) Select the "Standard Dual PCI IDE Controller".
- 7) Click on the "Remove" option.
- 8) Select "Yes" when prompted to re-start Windows 95.
- 10) When rebooting, system will find new hardware "PCI IDE Controller".
- 11) Select driver from manufacturer's disk.
- 12) Insert SIS driver Diskette and Install driver from Win95 directory.
 Note: There are two sub-directory under Win95 directory.
 - (1) PIOMODE: support driver for PIO mode.
 - (2) DMAMODE: support driver for DMA mode.
- 13) After giving the full path of the Win95 driver path, click OK.
- 14) Windows 95 will display a "Select Device" window. Choose OK.
- 15) Windows 95 will display a "Copying Files..." window. Choose OK.
- 16) Windows 95 will display a "System Settings Change" window. Choose No.
- 17) Windows 95 will display a "System Settings Change" window again. Choose Yes to restart computer.

5.6 Optimize disk performance

IDE device driver can support 7 different access speed for various HDD brand and model and will pick up the optimum performance automatically. Where the speed 1 is the fastest one and speed 7 the slowest. Access speed can be manually set by pressing "M" key while system boot up. Then just follow the instruction to set up the access speed desired. Access speed for different PIO mode is as follow:

Disk Mode :	4	3	2	1	0
Speed :	0	1	3	5	7

For WD and Quantum HDD, the speed should be adjusted as

Disk Mode :	4	3	2	1	0
speed :	1	1	3	5	7

PROBLEM REPORT FORM

DATE: / /

COMPANY NAME : _____ TEL: _____
 CONTACT PERSON: _____ FAX: _____

MODEL NO : _____
 CPU : _____
 COPROCESSOR : _____
 MEMORY : _____
 BIOS : _____
 HDC : _____
 HDD : _____
 VGA CARD : _____
 SOFTWARE : _____
 OTHERS : _____

PROBLEM DESCRIPTION:
