Flexible Main Board
User’s Guide

KM–T6–AL1, Version 1.0
December 1997

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1 INTRODUCTION

1.1 Overview

This KM–T6–AL1 mainboard is a full-featured IBM PC/AT™-compatible board that supports the PCI local bus and current and future models of the high-performance Pentium II CPU.

The board's control logic provides high-speed performance for the most advanced multi-user, multitasking computer applications available today. The board employs SDRAM Memory Modules (DIMMs) for maximum memory up to 384MB.

This mainboard is fully compatible with thousands of applications developed for IBM PC/AT™-compatible personal computers. The Peripheral Component Interconnect (PCI) local bus is a high-performance 32-bit bus that lets you add highly integrated peripheral controller components, peripheral add-on boards, and processor/memory systems.

In addition, the Industry Standard Architecture (ISA) bus slots allow you to choose from 8- or 16-bit industry-standard add-on boards. A floppy disk drive controller, IDE hard disk drive controller, serial ports (16550 UART), and parallel port (with EPP and ECP modes) are included so that peripheral devices can be easily connected without using the expansion slots.

The Accelerator Graphic Port (A.G.P.) interface slot is another feature of this mainboard. The AGP interface enables 3D applications which do not require exorbitant information storage so that images may be refreshed and at the same time will leave enough storage space to support texture mapping, z-buffering and alpha blending. It also allows 3D applications to run faster and look better on the mainstream price point PCs.

1.2 Features

This KM–T6–AL1 mainboard offers the following advanced features:

CPU

- Intel Pentium II at 233MHz ~ 333MHz

Memory

- Provides 3 DIMM up to 384MB
- “Table Free” DRAM configuration

I/O Slots

- Three 16-bit ISA slots
- Four 32-bit Bus Master PCI local bus slots
- One AGP slot

BIOS

- Licensed Award Flash “Plug & Play” BIOS

Onboard Super I/O

- Onboard peripheral ports:
  - — Two onboard serial ports (16550 fast UARTs compatible)
  - — Parallel port with bi-directional lines: supports Enhanced Parallel Port (EPP) and Extended Capabilities Port (ECP)
- Onboard Enhanced Intelligent Drive Electronics (IDE) hard disk drive controller; Onboard floppy disk drive controller
- Optional 12V or 5V flash memory BIOS (software upgradable)
- Supports PS/2 mouse, PS/2 keyboard, and 2 USB ports

- Supports 11.52 bps IrDA IR port; CPU hardware Green function
- Supports DMA/33, ACPI (Advanced configuration Power Management Interface)

1.3 Unpacking the Mainboard

This mainboard comes in a sturdy cardboard shipping carton, which should contain the following items:

- The KM–T6–AL1 Mainboard
- This User's Guide
- Utility Diskette
- CPU Retention Clip
- Cable Set

Follow the precautions below while unpacking the mainboard and do remember to leave the mainboard in its original package until you are ready to install it.

1. Before handling the mainboard, ground yourself by touching an unpainted portion of the system's metal chassis.
2. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.
3. Check the mainboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.
4. Do not apply power if the mainboard appears damaged. In this case, contact your dealer immediately.

1.4 Electrostatic Discharge Precautions

Make sure you ground yourself before handling the mainboard or other system components. Electrostatic discharge can easily damage the components. Note that you must take special precautions when handling the mainboard in dry or air-conditioned environments.

Take these precautions to protect your equipment from electrostatic discharge:

- Do not remove the anti-static packaging until you are ready to install the mainboard and other system components.
- Ground yourself before removing any system component from its protective anti-static packaging. To ground yourself, touch the expansion slot covers or other unpainted portions of the computer chassis.
- Frequently ground yourself while working, or use a grounding strap.
- Handle the mainboard by the edges and avoid touching its components.

1.5 Main Board Layout with Default Settings

The following figure shows the default settings for this mainboard: 3.5x CPU speed, 66MHz system clock, Onboard PCI IDE Enabled, Flash ROM.

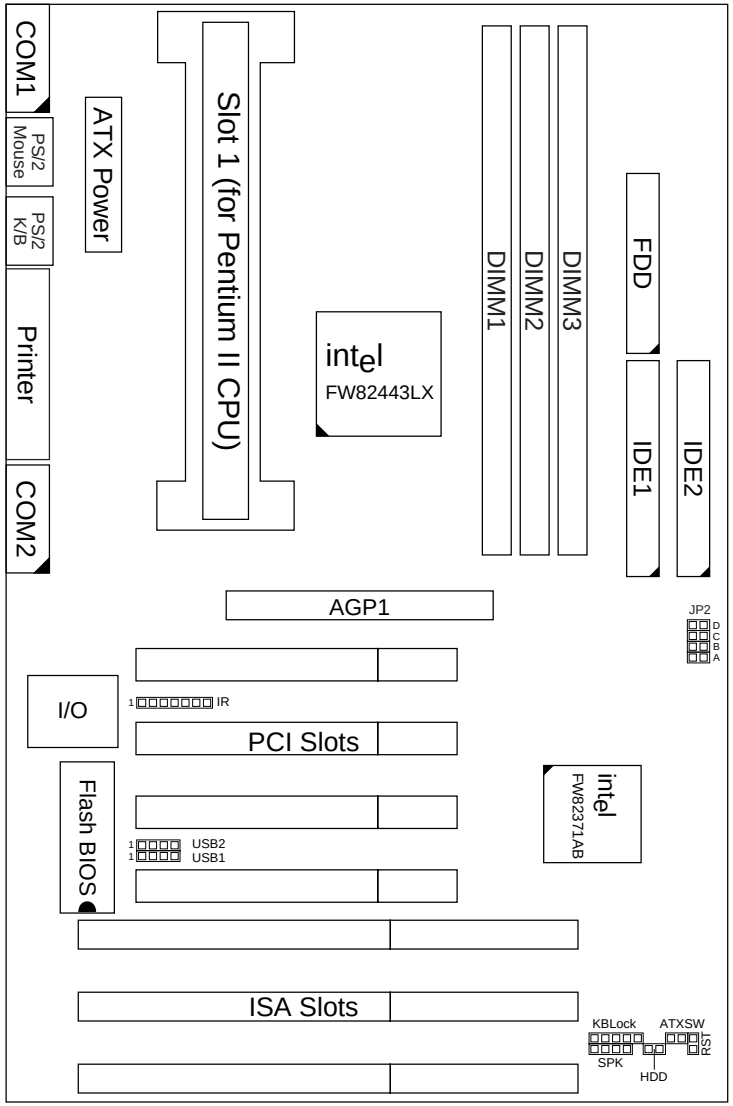


Figure 1–1. Mainboard Default Settings

2 HARDWARE SETUP

This part of the manual shows you how to do the hardware setup of this mainboard. Besides the proper procedures listed below, this section also discusses how to install Slot 1 and set the jumper switch settings and connectors on the board.

Step 1: Slot 1 Installation Procedures
Step 2: CPU Type Configuration
Step 3: Memory Installation
Step 4: Making connections through connectors
Step 5: Running the system

Go to Chapter 3 for BIOS setup after completing the above procedures.

2.1 Slot 1 Installation Procedures

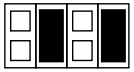
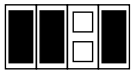
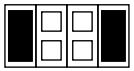
This mainboard provides a non-boxed Pentium II CPU retention set to secure the CPU on this board. Make sure that the Pentium II CPU is the right position when you install it to the board.

(Insert the CPU into the retention clip and notice that the heat sink is on the left hand side of the board. Lock the two latches on the sides of the CPU to secure the CPU.)

2.2 CPU Type Configuration

This section shows you how to configure your system.

JP2 (A, B, C, D): CPU Speed Jumper

Speed Rate	JP2 (A, B, C, D)	Speed Rate	JP2 (A, B, C, D)
3.5X		4.5X	
4.0X		5.0X	

2.3 Memory Configuration

This KM–T6–AL1 supports 168-pin 3.3V unbuffered type 3 DIMMs (Dual Inline Memory modules) of 8MB/16MB/32MB/64MB/128MB. The maximum memoryDIMMs is 384MB.

2.4 Connectors

This section describes some of the connectors on the mainboard. Refer to Figure 1–1 for the location of these connectors.

Note: Before making any connections to the board, make sure that the power to the system is turned off.

PS/2 Keyboard/Mouse Connectors

A six-pin female PS/2 keyboard connector and a six-pin female PS/2 mouse connector are located at the rear of the board. Plug the keyboard/mouse jacks into these connectors.

ATX Power – Power Supply Connector

The motherboard provides an ATX power supply connector. It is a twenty-pin male header connector. Plug the connector from the power directly onto the board connector while making sure the pin1 is in its position.

ATXSW – ATX Power Switch

This switch pin is used to control ATX power controller. Push this button to turn on the system, and if, push and hold this button longer than 4 seconds, the system will be turn off automatically, and also, there is another alternative in the CMOS setup section which allows you to turn off the system immediately.

HDD – Hard Disk Activity LED

This connector connects to the hard disk activity indicator light on the case.

RST – Reset Switch

The system board has a 2-pin connector for rebooting the computer without having to turn off the power switch. Rebooting this way prolongs the life of the system power supply.

KBLock – Keylock & Power LED Connector

This 2-pin connector enables or disables the keyboard and the Power LED on the case.

SPK – Speaker Connector

The speaker connector is a 4-pin connector for connecting the system and the speaker.

COM1/COM2 – Serial Port Connectors

This mainboard provides two 9 pin D-sub serial port connectors, COM1 and COM2.

FDD – Floppy Drive Connector

This mainboard has a 2 x 17-pin floppy drive connector.

IDE1/IDE2 – Primary/Secondary IDE Connectors

This mainboard has a 32-bit Enhanced PCI IDE Controller that provides two connectors, IDE0 (primary) and IDE1 (secondary).

PRT – Printer Connector

Connect this jumper to the printer.

USB1/USB2 – USB Connectors

Connect to the Universal Serial Bus driver.

IR – IR Connector

When COM2 is disabled, you can connect an infrared module to this port.

2.5 Running the System

After completing all the settings before running the system, you need to push the ATX power button so that the system will work.

3 AWARD BIOS SETUP

The ROM chips of your mainboard are configured with a customized Basic Input/Output System (BIOS) from Award Software Inc. The BIOS is a set of permanently recorded program routines that give the system its fundamental operational characteristics. It also tests the computer and determines how the computer reacts to specific instructions that are part of programs.

The BIOS is made up of codes and programs that provide the device level control for the major I/O devices in the system. It contains a set of routines (called POST, for Power-On Self Test) that check out the system when you turn it on. The BIOS also includes CMOS Setup programs, so no disk-based setup program is required. CMOS RAM stores information for:

- the date and time
- the memory capacity of the mainboard
- the type of display adapter installed
- the number and type of disk drives installed.

The CMOS memory is maintained by a battery installed on the mainboard. By using the battery, all memory in CMOS can be retained when the system power switch is turned off.

Use the CMOS Setup program to modify the system parameters to reflect the options installed in your system and to customize your system as desired. For example, you should run the Setup program after you:

- replace the battery
- install another disk drive
- receive an error code at startup
- use your system after not having used it for a long time

- find the original setup missing.

Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

3.1 Entering the CMOS Setup Program

1. Turn on or reboot the system. After a series of diagnostic checks, the following message will appear:

   ```
   PRESS <DEL> TO ENTER SETUP
   ```

2. Press the <DEL> key and the main program screen appears as in figure 3–1.

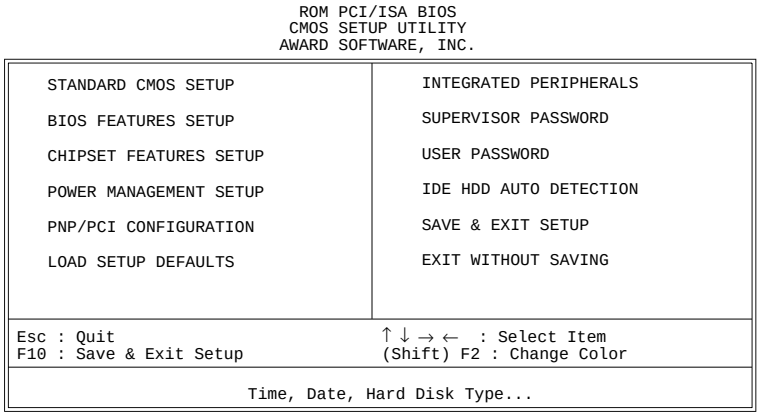


Figure 3–1. Main Program Screen

3. Use one of the arrows on the keyboard to select an option and press <Enter>. Modify the system parameters to reflect the options installed in the system.

4. Return to the Main Menu anytime by press <ESC>.

5. In the Main Menu, “SAVE AND EXIT SETUP” saves the changes and reboots the system, and “EXIT WITHOUT SAVING” ignores the changes and exits the program.

Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. Use this option to change configuration values when changing the system hardware setup or when the data stored in the CMOS memory gets lost or damaged.

Run the Standard CMOS Setup as follows:

1. Choose "STANDARD CMOS SETUP" from the Main Menu and a screen depicted in Figure 3–2 appears.

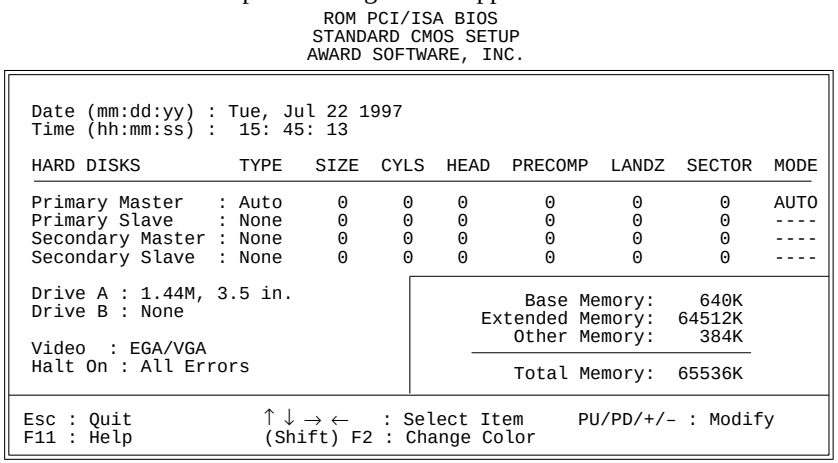


Figure 3–2. Standard CMOS Setup Screen

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options (Figure 3–2) follows:

Date (mm:dd:yy)	Set the current date.
Time (hh:mm:ss)	Set the current time.
Primary/Secondary Master/Slave	This field records the specifications for all non-SCSI hard disk drives installed in the system. Refer to the respective documentation on how to install the drivers.

Drive A/B	Set this field to the types of floppy disk drives installed in the systems. The choices are: 360KB, 5.25 in.; 72KB, 3.5 in.; 1.44MB, 3.5 in.; (default) 2.88MB, 3.5 in.; or None.
Video	Set this field to the type of video display card installed in the system. The choices are: Monochrome; CGA 40; VGA/EGA (default); or CGA 80.
Halt On	Set this field to the type of errors that will cause the system to halt. The choices are: All Errors (default); No Errors; All, But Keyboard; All, But Diskette; or All, But Disk/Key.

3. Press <ESC> to return to the Main Menu when you finish setting up in the "STANDARD CMOS SETUP".

BIOS Features Setup

BIOS Features Setup allows you to fine tune the system to improve performance or to record the system feature preferences.

Run the BIOS Features Setup as follows:

1. Choose "BIOS FEATURES SETUP" from the Main Menu, and a screen depicted in Figure 3–3 will appear.

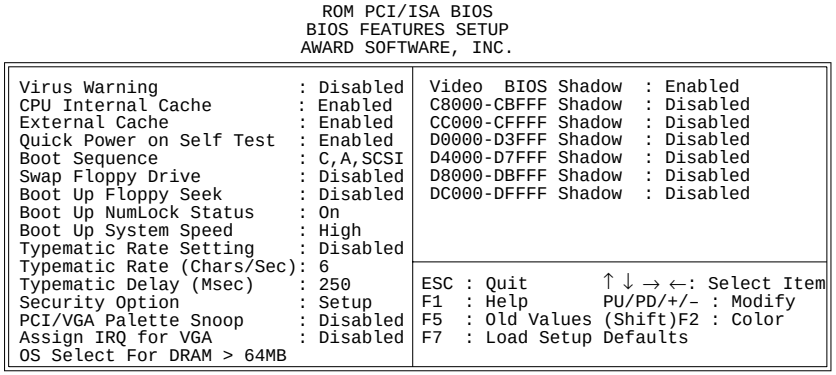


Figure 3–3. BIOS Features Setup Screen

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys. An explanation of the <F> keys follows:

<F1>:	"Help" gives options available for each item.
Shift <F2>:	Changes color.
<F5>:	Resets the previous values. These values are the values with which the user started the current session.
<F6>:	Loads all options with the BIOS default values.
<F7>:	Loads all options with the Setup default values.

A short description of screen options (Figure 3–3) follows:

Virus Warning	Choose Enabled or Disabled (default).
CPU Internal Cache	Choose Enabled (default) or Disabled. This option allows the enabling or disabling of the CPU internal cache.
External Cache	Choose Enabled (default) or Disabled. This option allows the enabling or disabling of the external cache memory.
Quick Power On Self Test	Choose Enabled (default) or Disabled. This option speeds up the Power On Self Test routine.

Boot Sequence	Choose "C: A, SCSI" (default), or others. This option determines which drive to engage first for the operating system.
Swap Floppy Drive	Choose Enabled or Disabled (default). This option swaps floppy drive assignments when enabled.
Boot Up Floppy Seek	Choose Disabled (default) or Enabled.
Boot Up NumLock Status	Choose On (default) or Off. This option activates the NumLock function at boot-up time.
Boot Up System Speed	Choose High (default) or Low.
Typematic Rate Setting	Choose Enabled or Disabled (default). Enable this option to adjust the keystroke repeat rate.
Typematic Rate (Chars/Sec)	Range between 6 (default) and 30 characters per second. This option controls the speed of repeating keystrokes.
Typematic Delay (Msec)	Choose 250 (default), 500, 750, or 1000. This option sets the time interval for displaying the first and the second characters.
Security Option	Choose System or Setup (default). This option is used to prevent unauthorized system boot-up or use of BIOS Setup.
Assign IRQ for VGA	Choose Enabled or Disabled (default).
Video BIOS Shadow	Enabled (default): maps the VGA BIOS to system RAM for greater performance. Disabled: No mapping of the VGA BIOS to system RAM.
C8000–CBFFF to DC000–DFFF Shadow	These options are used to shadow other expansion cards' ROM.

3. Press <ESC> and follow the screen instructions to save or disregard the changes.

Chipset Features Setup

Chipset Features Setup changes the values of the chipset registers. These registers control the system options. Modification other than the default value should first have chipset knowledge.

Run the Chipset Features Setup as follows:

1. Choose "CHIPSET FEATURES SETUP" from the Main Menu and a screen depicted in Figure 3–4 appears.

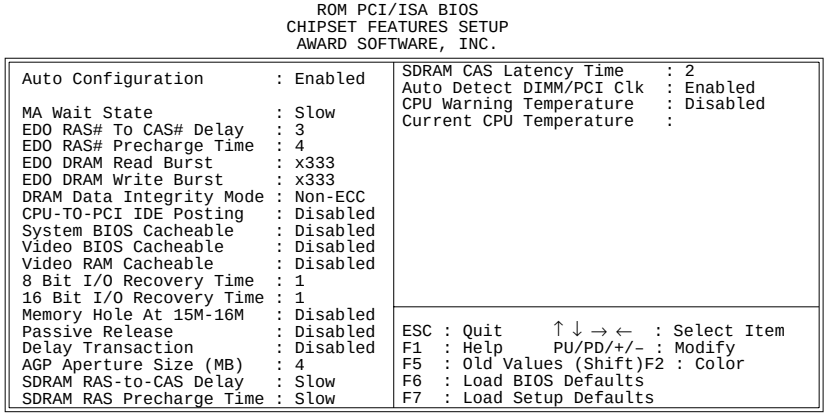


Figure 3–4. Chipset Features Setup Screen

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options (Figure 3–4) follows:

Auto Configuration	Enable this option (strongly recommended) and the system automatically sets all options on the left side of the screen (except cache update mode & BIOS cacheable). **If this option is Enabled you must boot from Turbo mode.**
MA Wait State	Use the default setting.

EDO RAS# to CAS# Delay	Use the default setting.
EDO RAS# Precharge Time	Use the default setting.
EDO DRAM Read Burst	Use the default setting.
EDO DRAM Write Burst	Use the default setting.
DRAM Data Integrity Mode	Choose Non-ECC (default) or ECC according to the DRAM type you have.
CPU-TO-PCI IDE Posting	Use the default setting.
System BIOS Cacheable	Disabled: The ROM area F0000H-FFFFFH is not cached. Enabled: The ROM area F0000H-FFFFFH is cacheable if cache controller is enabled.
Video BIOS Cacheable	Disabled: The video BIOS C0000H-C7FFFH is not cached. Enabled: The video BIOS C0000H-C7FFFH is cacheable if cache controller is enabled.
Video RAM Cacheable	Use the default setting.
8Bit I/O Recovery Time	Use the default setting.
16Bit I/O Recovery Time	Use the default setting.
Memory Hole At 15M-16M	Choose Enabled or Disabled (default). Some interface cards will map their ROM address to this area. If this occurs, you should select Enabled, otherwise use Disabled.

Passive Release	Use the default setting.
Delayed Transaction	Use the default setting.
AGP Aperture Size	AGP could use the DRAM as its video RAM. Choose the DRAM size that you want it to be used as video RAM. The range is from 4MB to 256MB.
SDRAM RAS-to-CAS Delay	Use the default setting.
SDRAM RAS Precharge Time	Use the default setting.
SDRAM CAS Latency Time	Use the default setting.
Auto Detect DIMM/PCI Clk	Use the default setting.
CPU Warning Temperature	Choose **Disabled** (default) or **Enabled**. Set CPU temperature from 50ºC to 70ºC. The system will slow down automatically when CPU temperature goes beyond the preset value. CPU will continue to run slow until the CPU temperature returns back within the safe range.
Current CPU Temperature	Show the current status of CPU.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Power Management Setup

Power Management Setup sets the system instructions power saving functions.

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen depicted in Figure 3–5 will appear.

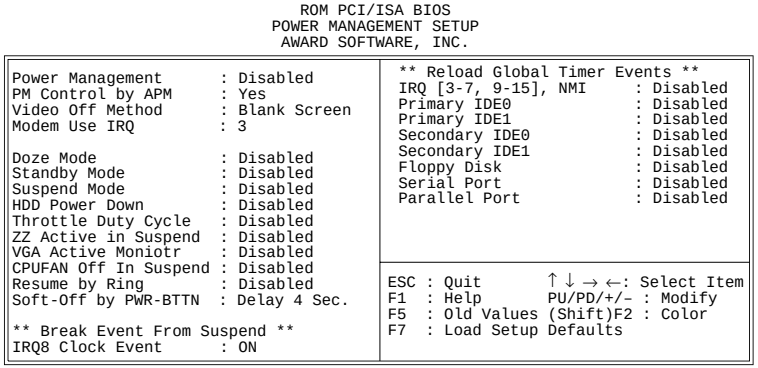


Figure 3–5. Power Management Setup Screen

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options (Figure 3–5) follows:

Power Management	Choose Max, Saving, User Define, Disabled (default), or Min. Saving.
PM Control by APM	Choose Yes (default) or No. Choose Yes if the operating system has APM functions, choose No otherwise.
Video Off Method	Choose Blank Screen (default), DPMS, or V/H Sync+Blank. You can choose either DPMS or V/H Sync+Blank when the monitor has the Green function. Choose Blank when the monitor has no Green function.
Doze Mode	This option sets the CPU speed down to 33 MHz to conserve power.

Standby Mode	Standby Mode turns off the VGA monitor, choose a mode for the different timers.
Suspend Mode	Suspend Mode turns off the CPU, thus saving the energy of the systems.
HDD Power Down	When the set time has elapsed, the BIOS sends a command to the HDD to power down.
Wake-Up Event	Set these IRQs individually. Activity detected from any enabled IRQ channel (ON) will wake up the system.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

PnP/PCI Configuration Setup

PnP/PCI Configuration Setup configures the PCI bus slots. Run the PnP/PCI Configuration Setup as follows:

1. Choose “PNP/PCI CONFIGURATION SETUP” from the Main Menu and a screen depicted in Figure 3–6 will appear.

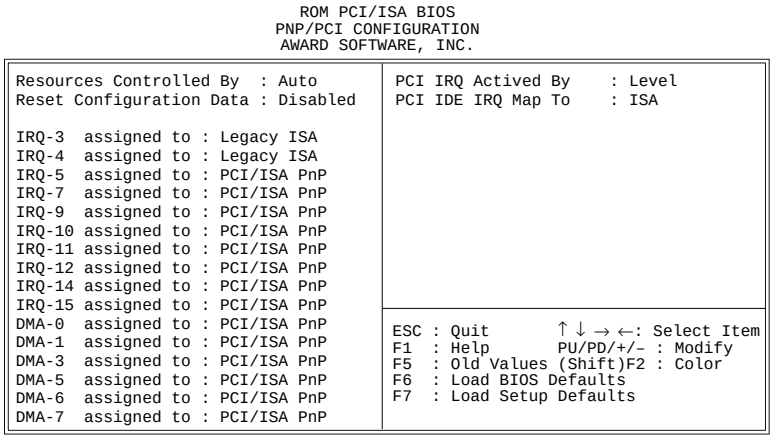


Figure 3–6. PnP/PCI Configuration Setup Screen

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options (Figure 3–6) follows:

Resources Controlled By	Choose Auto (default) or Manual.
Reset Configuration Data	Choose Enabled or Disabled (default).
PCI IRQ Actived By	Choose Level or Edge (default).
PCI IDE IRQ Map To	Choose ISA (default), PCI-Auto, PCI-SLOT1 through PCI-SLOT4.
Primary/Secondary IDE INT#	These options are available when selecting PCI-Auto or PCI-SLOT1~4 in “PCI IDE IRQ Map to”. Choose INT#A through D.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Load Setup Defaults

Load Setup Defaults option loads the default system values to the system configuration fields. If the CMOS is corrupted, the defaults are loaded automatically. Choose this option, and the following message will appear:

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

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

Integrated Peripherals Setup

1. Choose "INTEGRATED PERIPHERALS SETUP" from the Main Menu, and a screen depicted in Figure 3–7 will appear.

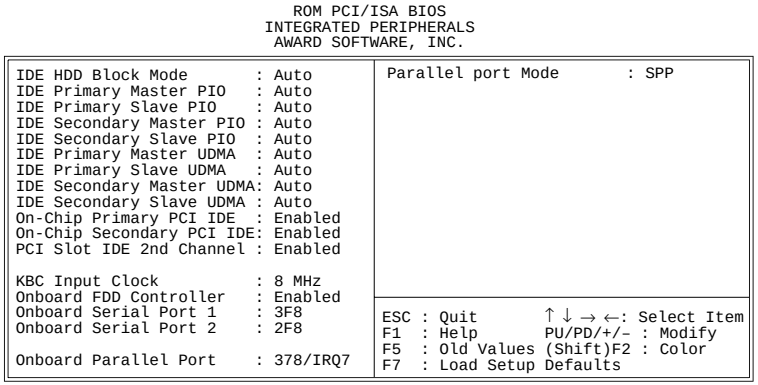


Figure 3–7. Power Management Setup Screen

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options (Figure 3–7) follows:

IDE HDD Block Mode	Choose Auto (default) or Disabled.

IDE Primary Master/Slave PIO; IDE Secondary Master/Slave PIO; IDE Primary Master/Slave UDMA; IDE secondary Master/Slave UDMA	Choose Auto (default) or Mode 0~4. The BIOS detects the HDD Mode type automatically when select Auto. Set to a lower mode other than Auto when the hard disk becomes unstable.
On-Chip Primary/Secondary PCI IDE	Enabled (default): Turns on the on-board IDE function. Disabled: Turns off the on-board IDE function.
KBC Input Clock	Use the default setting.
Onboard FDC Controller	Choose Enabled (default) or Disabled. Choose Disabled when you use an ISA card with FDD function, or, choose Enabled to use the onboard FDD connector.
Onboard Serial Port1	Choose COM1/3F8 (default), COM2/2F8, COM3/3E8, COM4/2E8, or Disabled. Do not set COM port 1 & 2 to the same value except Disabled.
Onboard Serial Port2	Choose COM1/3F8, COM2/2F8 (default), COM3/3E8, COM4/2E8, or Disabled.
Onboard Parallel Port	Choose the printer I/O address: 378H (default), 3BCH, 278H, Disabled.
Parallel Port Mode	Choose ECP/EPP, SPP (default), EPP, or ECP mode. The mode depends on the external device that connects to this port.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Password Setting

This option allows the user to set the system password. To set the password:

1. Choose “Password Setting” in the Main Menu and press <Enter>. The following message appears:

   `"Enter Password:"`

2. When running this option for the first time, enter the password (up to 8 characters) and press <Enter>. For security, the screen will not display the entered characters.

3. After entering the password, the following message appears prompting for the confirmation of the password:

   `"Confirm Password:"`

4. Enter the same password again to confirm the password and press <Enter>.

5. Move the cursor to Save & Exit to save the password.

6. To delete the password entered before, choose the `"Password Setting"` and press <Enter>. This will delete the old password.

7. Move the cursor to Save & Exit to save the option, otherwise the old password will still be stored when you turn on the machine the next time.

8. Press <ESC> to exit to the Main Menu.

Note: *If you forget or lose the password, the only way to access the system is to clear the CMOS RAM by shorting J7 across pin2 and 3. All setup information will be lost and you will need to run the BIOS setup program again.*

IDE HDD Auto Detection

IDE HDD Auto Detection detects the parameters of an IDE hard disk drive and automatically enters them to the Standard CMOS Setup Screen.

After selecting this option, the screen prompts for a selection of a specific hard disk for Primary Master after you select this option. Enter "Y" to confirm the acceptance of the hard disk detected by the BIOS. Press <Enter> to check next hard disk. This function checks up to four hard disks. User can press the <ESC> after the <Enter> to skip this function to return to the Main Menu.

Save & Exit Setup

Save & Exit Setup saves all modifications specified into the CMOS memory. Highlight this option on the Main Menu and the following message will appear:

```
SAVE to CMOS and EXIT (Y/N)?  Y
```

Press <Enter> key to save the configuration changes.

Exit Without Saving

Exit Without Saving exits the Setup utility without saving the modifications specified. Highlight this option on the Main Menu and the following message will appear:

```
Quit Without Saving (Y/N)?  N
```

To quit without saving, change the prompt to "Y" and press <Enter> key to exit.

3.2 FLASH ROM Utility

This section shows you how to update your BIOS program.

Step 1: Make sure your operating environment is DOS (not windows DOS session) and remove every configured driver by renaming the config.sys and autoexec.bat, then reboot.

Step 2: Use the command in c prompt, such as:

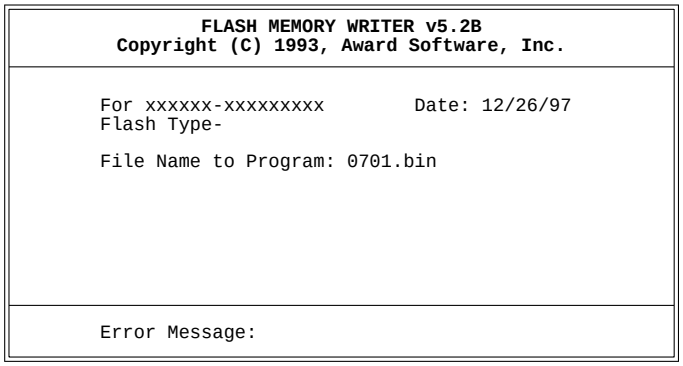
```
flash <path>0701.bin
```

or

```
flash
```

then type file name later.

The following screen will appear:



Step 3: Select Y or N when the utility asks to save the older version of BIOS or not. Go to Step 4 if select Y, otherwise enter the file name to save, then go to Step 4.

```
            FLASH MEMORY WRITER v5.2B
      Copyright (C) 1993, Award Software, Inc.

      For xxxxxx-xxxxxxxxx        Date: 12/26/97
      Flash Type-

      File Name to Program: 0701.bin




      Error Message: Do You Want To Save BIOS (Y/N)?
```

Step 4: Make sure that you really need to update your system BIOS, then press Y to go on, otherwise stop it.

```
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      For xxxxxx-xxxxxxxxx        Date: 12/26/97
      Flash Type-

      File Name to Program: 0701.bin




      Error Message: Are You Sure To Program (Y/N)?
```