Edition: June 1998
Version: 1.0
SM–P6BX2

This User's Guide & Technical Reference is for assisting system manufacturers and end users in setting up and installing the mainboard. Every effort has been made to ensure that the information in this manual is accurate. Information in this document is subject to change without notice.

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CONTENTS

1: INTRODUCTION

Features

CPU

- Supports Intel Pentium II CPUs running at 233 ~ 400 MHz

Chipset

- Intel 100MHz 440BX AGP set chipset with PIIX4E South Bridge

Main Memory

- Provides 3 DIMM sockets to support 4MB/8MB/16MB/32MB/ 64MB/128MB/256MB SDRAM/EDO memory modules up to 768MB;
- Supports ECC configuration;
- Supports auto detection of memory type;
- PC100 (100MHz) Compliant SDRAM Interface

BIOS

- AWARD Anti-Boot Virus & PnP BIOS with ACPI, AGP, DMI, Green, Plug and Play Features;
- Enhanced ACPI Features for PC98/Win98

I/O Function

- PS/2 mouse and Keyboard connectors, Universal Serial Bus (USB) interface, and Infrared Connector;

- Onboard super Multi-I/O chip supports 2 serial ports with 16550 fast UART compatible, 1 parallel port with EPP and ECP capabilities, and one floppy disk drive interface;
- OnBoard supports IR function

ACPI Features (for ATX Only)

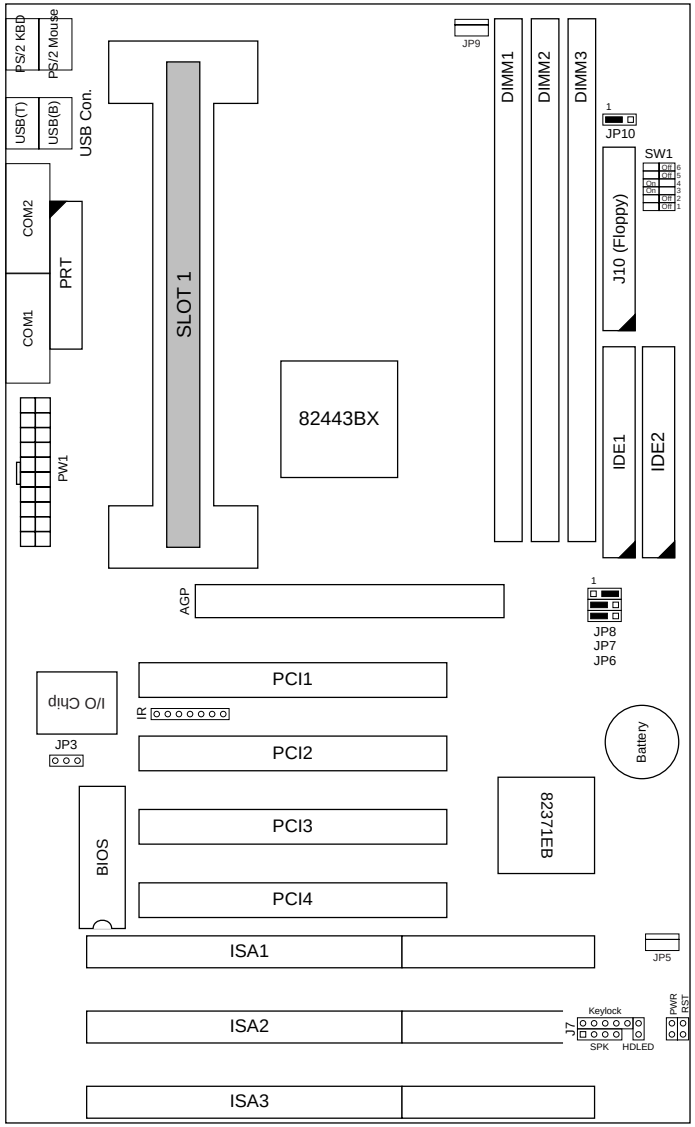
- Supports Advanced Configuration Power Interface (ACPI) and Legacy PMU, fully compliant to PC97 & PC98;
- Provides ATX power which supports various functions, such as Suspend/Shutdown

Other Functions

- Onboard PCI Bus Master IDE interface supports 4 IDE devices with 2 channels; BIOS supports 4 IDE harddisk drives which do not need device driver for S/W application and the capacity of each harddisk can be larger than 528MB and up to 8.4GB;
- Provides one AGP Bus slot, 4 PCI slots and 3 ISA slotsPCI Bus Master IDE controller which supports PIO Mode 0 to Mode 4, and the Ultra DMA/33 is at the maximum transfer rate of 33MB/sec and Bus Master IDE DMA Mode 2;
- Supports 2.88MB, Iomega ZIP-100M, and IDE LS-120 FDD, bootable from floppy, HDD ,CD-ROM, SCSI, NetWork, LS-120, ZIP, or others;
- Supports Fan Stauts, Monitor Alarm, and Temperature Monitor and Alert, Voltage Monitor and Alert, System Resources Alert, and Virus Write Protection through the optional LM78/LM75 or compatible Hardware Monitor and Intel® LANDESK Client Manager (LDCM) software;
- Wake-On-LAN header onboard;
- Onboard Creative® SB-Link header

Mainboard Layout

The following figure is the layout of P6BX2.



Motherboard Layout

2: HARDWARE SETUP

Jumpers/Connectors Settings

This section describes some of the connectors on the mainboard.

J1 – ATX Style Power Connector

The ATX power supply provides a single 20-pin connector.

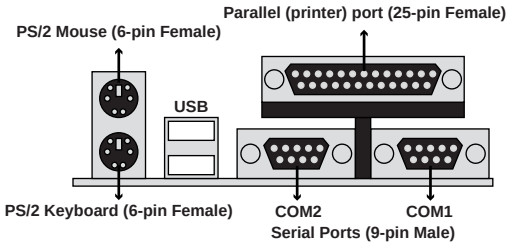
Pin	Description	Pin	Description
1	3.3V	11	3.3V
2	3.3V	12	–12V
3	Ground	13	Ground
4	+5V	14	PS-ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	Power OK	18	–5V
9	5VSB	19	+5V
10	+12V	20	+5V

Software Power-Off (for ATX Only)

Follow the steps below to use the “Software Power-Off Control” function in Windows 95 with ATX power supply.

1. Click the START button on the Windows 95 task bar.
2. Select Shut Down The Computer to turn off the computer. The message “It is now safe to turn off your computer.” will not be shown when using this function.

External Connectors Location

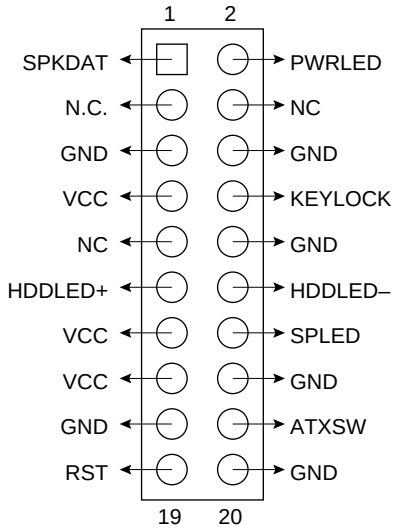


Side View

J10 – Floppy Disk Drive Connector

J8/J9 – Primary/Secondary IDE Connectors

J7 – Pin Description



J7 (2, 4, 6, 8, 10) (KEY-LOCK) – Keylock & Power LED Connector

Pin	Description
2	LED Output

4	N.C.
6	Ground
8	Keylock
10	Ground

J7 (18, 20) (PWRBT) – Power Button & Suspend Switch Connector (for ATX Only) (??There are 2 J7(20) mentioned in this manual, one iw here and the other J7(20) is used for RST??2)

When the system is turned off, push the power button to turn the system back on.

When the system is on, push the power button rapidly to switch the system to the Suspend mode, and, by pushing and holding the button for more than 4 seconds to turn the system completely off. When the system is in the Suspend mode, push the power button rapidly to turn the system on.

J7 (11, 12) (HD-LED) – HDD LED Connector

Pin	Description
11 (+)	+5V
12(–)	Active Low

J7 (1, 3, 5, 7) (SPK) – Speaker Connector

Pin	Description
1	Data Out
3	N.C.
5	Ground
7	+5V

J7 (19, 20) (RST) – Reset Switch Connector

Attach the Reset push button cable to this connector.

Setting	Description
Open	Normal Mode
Close	Reset System

J7 (13, 14) (SPLED) – SUSPEND LED

Setting	Description
13 (+)	+5V
14 (–)	Active Low

JPX1 – CMOS Battery

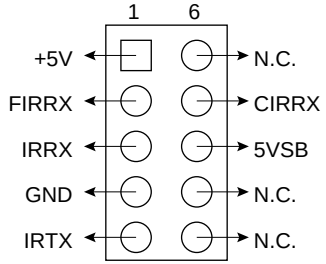
Pin	Description
1–2	Normal (default)
2–3	Clear CMOS

JP5/JP9/JX3 (FAN1/FAN2/FAN3) – CPU & Chasis Fan Connector

Pin	Description
1	Ground
2	+12V
3	W83781D

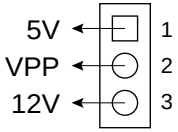
IR1 – Infrared Module Connector

(??IR on the board has 7 pins, and here is 2x5 pins??)

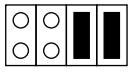
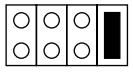
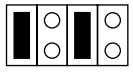
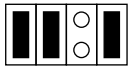
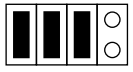
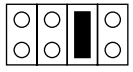
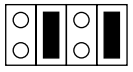
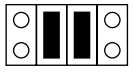
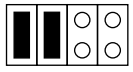
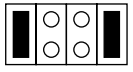


JP10 – Flash ROM Voltage

Pin	Description
1–2	5V (default)
2–3	12V



SW1 – CPU Speed Frequency Selectors

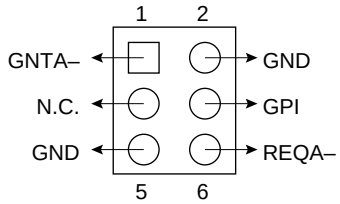
PII	Setting	PII	Setting	PII	Setting
3.5X		5.5X		7X	
4X		6X		7.5X	
4.5X		6.5X		8X	
5X					

(??This table is not quite right. Should be on/off switch instead of open/short jumpers??)

JP6/JP7/JP8 – CLK Selectors

	JP6	JP7	JP8
66.6MHz	1–2	1–2	2–3
100MHz	1–2	1–2	1–2

JP11 – Creative® SB-Link Header



PRINT1 – PRINT Port

This mainboard provides a 2 x 13-pin parallel port connector.

COM1/COM2 – Serial Port Connectors

This mainboard provides two 2 x 5-pin serial port connectors, COM1 and COM2.

FDC1 – 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, IDE1 (primary) and IDE2 (secondary).

System Memory Configuration

The mainboard lets you add up to 256MB of system memory through DIMM sockets on the board. Each bank consists of two 168-pin DIMM sockets are divided into two banks: Bank 0 and Bank 1. The mainboard supports the following memory configurations.

Bank	Memory Module
Bank 0 DIMM1 (168-pin DIMM)	4MB, 8MB, 16MB, 32MB, 64MB, 128MB
Bank 1 DIMM2 (168-pin DIMM)	4MB, 8MB, 16MB, 32MB, 64MB, 128MB
Total System Memory = Bank 0 + Bank 1	

Notes: 1. The speed of all DIMM modules have to be faster than 70ns.
2. Use 2 DRAM types: Extend Data Out (EDO), or Synchronous DRAM (SDRAM) for DIMM socket.

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.

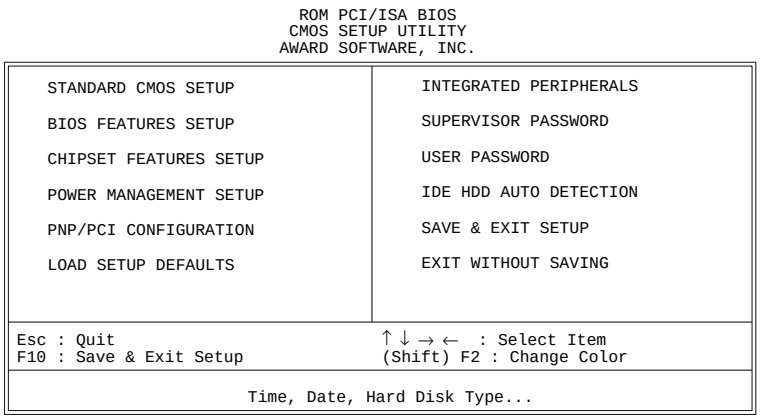
Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

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.



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>.

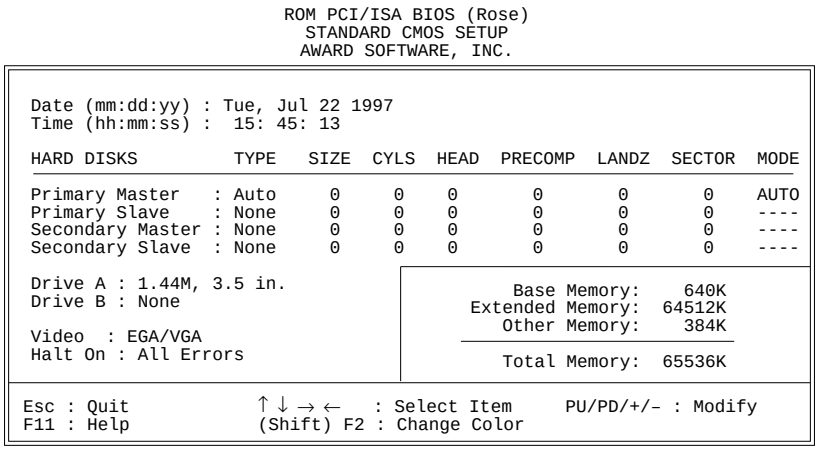
5. In the Main Menu, “SAVE AND EXIT SETUP” saves the changes and reboots the system, and “EXIT WITHOUT SAVING” ignores the changes and exits the program.

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 the following screen appears:



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.

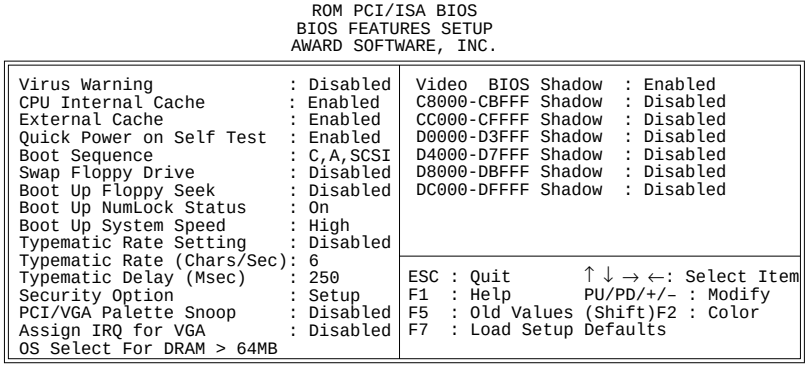
3. Press <ESC> to return to the Main Menu when you finish setting up in the "STANDARD CMOS SETUP".

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 the following figure appears on the screen:



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 Delay (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 the following figure appears on the screen:

```
                    ROM PCI/ISA BIOS
                CHIPSET FEATURES SETUP
                 AWARD SOFTWARE, INC.

Auto Configuration       : Enabled      | SDRAM CAS Latency Time    : 2
                                        | Auto Detect DIMM/PCI Clk  : Enabled
MA Wait State            : Slow         | CPU Warning Temperature   : Disabled
EDO RAS# To CAS# Delay   : 3            | Current CPU Temperature   :
EDO RAS# Precharge Time  : 4
EDO DRAM Read Burst      : x333
EDO DRAM Write Burst     : x333
DRAM Data Integrity Mode : Non-ECC
CPU-TO-PCI IDE Posting   : Disabled
System BIOS Cacheable    : Disabled
Video BIOS Cacheable     : Disabled
Video RAM Cacheable      : Disabled
8 Bit I/O Recovery Time  : 1
16 Bit I/O Recovery Time : 1
Memory Hole At 15M-16M   : Disabled
Passive Release          : Disabled     | ESC : Quit     ↑ ↓ → ←  : Select Item
Delay Transaction        : Disabled     | F1  : Help     PU/PD/+/- : Modify
AGP Aperture Size (MB)   : 4            | F5  : Old Values (Shift)F2 : Color
SDRAM RAS-to-CAS Delay   : Slow         | F6  : Load BIOS Defaults
SDRAM RAS Precharge Time : Slow         | F7  : Load Setup Defaults
```

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.

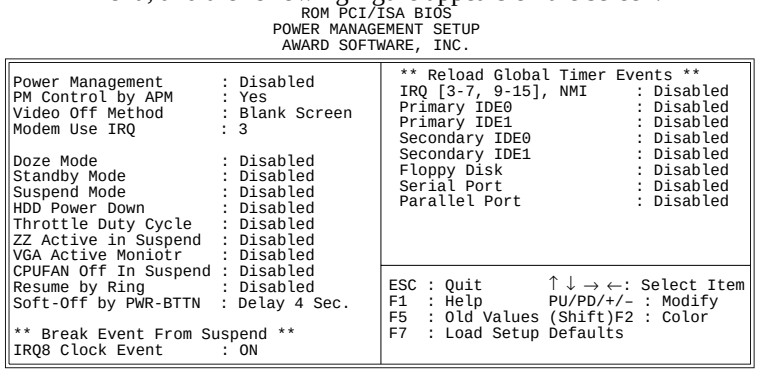
Current CPU Temperature — Show the current status of CPU.

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 the following figure appears on the screen:



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.

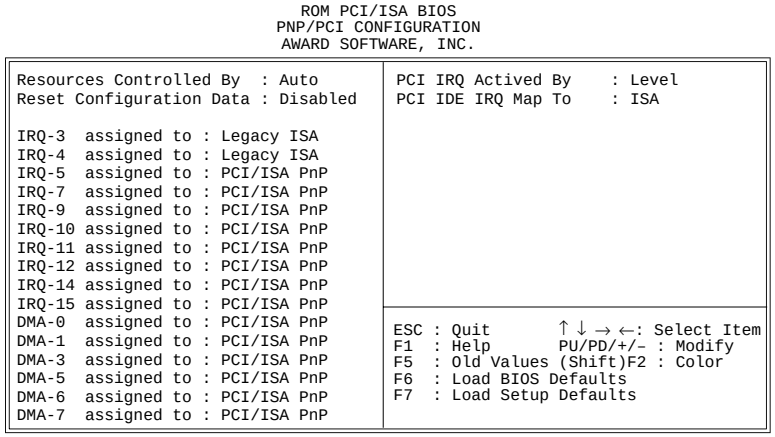
PM Control by APM	Choose Yes (default) or No. Choose Yes if the operating system has APM functions, choose No otherwise.
Video Off Method	Choose Blank Screen (default), DPMS, or V/H Sync+Blank. You can choose either DPMS or V/H Sync+Blank when the monitor has the Green function. Choose Blank when the 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 the following figure appears on the screen:



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

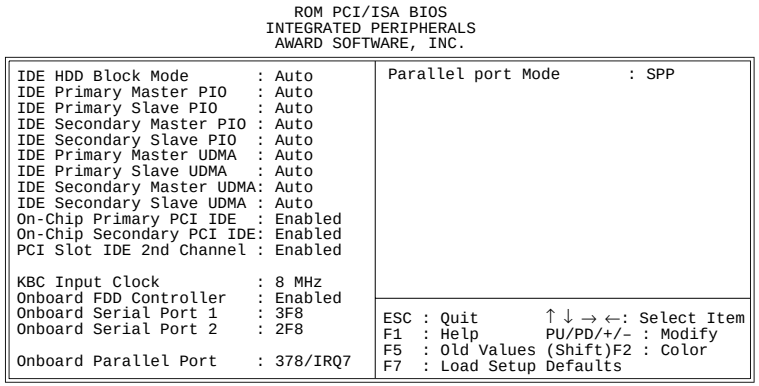
Load Setup Defaults option loads the default system values to the system configuration fields. If the CMOS is corrupted, the defaults are loaded automatically. Choose this option, and the following message will appear:

```
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 the following figure appears on the screen:



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 follows:

IDE HDD Block Mode — Choose Enabled (default) or Disabled. If the hard disk size is larger than 540MB, choose Enabled.

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 FDD 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 (default), SPP, 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.

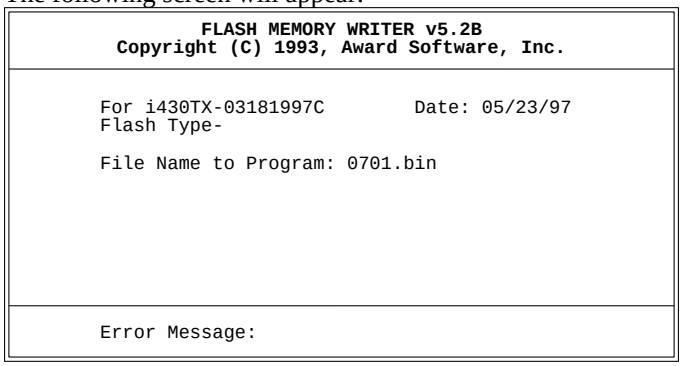
FLASH ROM Utility

This section shows you how to update your BIOS program.

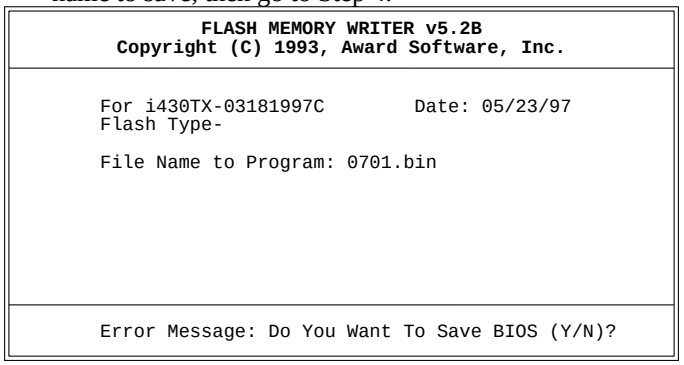
1. Make sure your operating environment is DOS (not windows DOS session) and remove every configured driver by renaming the config.sys and autoexec.bat, then reboot.

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:



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.



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