

P5HX-B

User's Manual (for Award BIOS)

V1.3

August, 1996

This mainboard requires correct configuration information; otherwise, a malfunction may result.



Static electricity can cause serious damage to integrated circuit minboards. To avoid building up a static electric charging on your body, be sure you discharge any static electricity by grounding yourself before handling the minboards. If minboards are handed from one person to another, they should touch hands first, then pass the minboards.

Information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

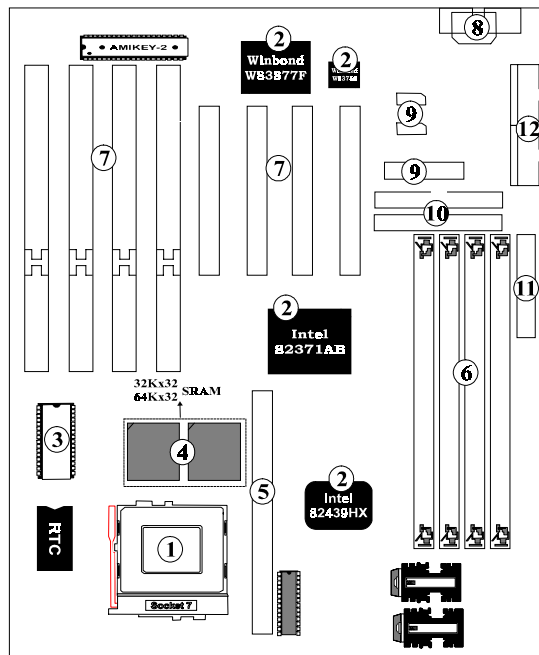
Contact your dealer for warranty details.

Trademarks

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1 Introduction

Mainboard Description



- | | |
|-----------------------------|---------------------------------------|
| ① Processor | ⑦ Expansion Slots |
| ② Chipset | ⑧ AT K/B or PS/2 Mouse & Keyboard Set |
| ③ System BIOS | ⑨ Serial / Parallel Ports |
| ④ L2 On-board Cache | ⑩ PCI IDE Connectors |
| ⑤ L2 Cache Module | ⑪ FDD Connector |
| ⑥ SIMM System Memory Socket | ⑫ Power Supply Connectors |

P5HX-B

P5HX-B is a Pentium PCI W/Z I/O mainboard using Intel 430HX chipset (TXC, PIIX 3) and Winbond I/O Chip W83877F, W83768F. P5HX-B integrated with new capacities, such as PB SRAM, ECC, USB, and BUS Master IDE...etc. is designed to support leading technologies of PC market.

1. Processor:

Intel Pentium™ 75/90/100/120/133/150/166/200 MHz
Intel Pentium with MMX technology (P55C)
Cyrix 6x86 P120+/P133+/P150+/P166+
Ready for power-split CPU (dual voltage CPU)

2. Chipset:

Intel 430HX 82439HX (TXC) / 82371AB (PIIX3)
Winbond I/O Chip W83877F, W83768F

3. System BIOS:

Award BIOS

4. L2 On-board Cache:

Provide Pipelined Burst SRAM 256/512 KB on-board.

5. L2 Cache Module :

An optional ECS "CM161" or later version of upgrade cache module can be inserted to expand the cache memory size to 256KB or 512KB.
An "COAST 2.0" or later cache module can also be used to upgrade the cache memory size.

6. SIMM System Memory Socket:

Support 72-pin SIMMs of 4MB, 8MB, 16MB ,32MB or 64MB to form a memory size between 8MB to 256MB

7. Expansion Slot:

4 ISA Bus Slots.
4 PCI Bus Slots. (One ISA-PCI Shared Slot)

8. AT K/B or PS/2 Mouse & Keyboard Set:

Provides Connectors for AT K/B or PS/2 Keyboards & PS/2 Mouse.

9. Serial / Parallel Port:

Provides two serial ports and one parallel port.

10. PCI IDE Connector:

2 Enhanced PCI IDE up to 4 IDE Device Connectors.

11. FDD Connector:

Provides an on-board FDD Connector which supports 360KB/720KB/1.2MB/1.44MB/2.88MB type drives.

12. Power Supply Connectors:

Provides the connectors for standard PC power supply.

Features

θ CPU:

- One Socket 7 supports Pentium 75/90/100/120/133/150/166/200 MHz CPU and Intel Pentium OverDrive CPUs.
- Manufacture optional 2nd Regulator to support Intel Pentium with MMX technology.(P55C)
- Support Cyrix P120+/P133+/P150+/P166+ CPU.
- Ready for Cyrix 6x86 L.

θ BIOS:

- Support Award BIOS with flash ROM.
 - ⌘ PNP specification V1.0a
 - ⌘ APM specification V1.2
 - ⌘ DMI specification
 - ⌘ Boot from CD-ROM

θ Cache:

- Support the CPU's internal first level (L1) cache and external secondary level (L2) cache.
 - > **16KB Level 1 Cache: (Pentium)**
 - ⌘ Data Cache: support 8KB Write-Through and Write-Back policy.
 - ⌘ Code Cache: support 8KB Write-Through policy.
 - > **256KB /512KB (optional) Pipelined Burst SRAM On Board.**
 - > **160-pin Cache Module Socket for Level 2:**
 - ⌘ Support COASt 2.0 or later Pipelined Burst for 256KB or 512KB.

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- An optional ECS “CM161” or later version of upgrade cache module can be inserted to expand the cache memory size to 256KB or 512KB.

⊖ **Memory:**

- Support 4 pieces of 72-pin SIMM sockets with memory size from 8MB to 256MB.
- Support EDO/ Fast Page Mode DRAM.
- Support parity check or ECC function with parity SIMMs.

⊖ **Slots:**

- Four 16-bit ISA slots with 100% ISA compatible function.
- Four 32-bit PCI slots support PCI Bus master.
 - PCI specification version 2.1.
 - CPU to PCI memory write posting with 4 word deep buffers.
 - Converts Back-to-Back sequential CPU to PCI memory writes to PCI Burst writes.

⊖ **FDD:**

- Two floppy support 360KB, 720KB, 1.2MB, 1.44MB, 2.88MB, and 3 Mode floppy drives.

⊖ **RTC:**

- Use Dallas 12B887 compatible RTC module (Internal 128 byte of CMOS RAM).

⊖ **IDE:**

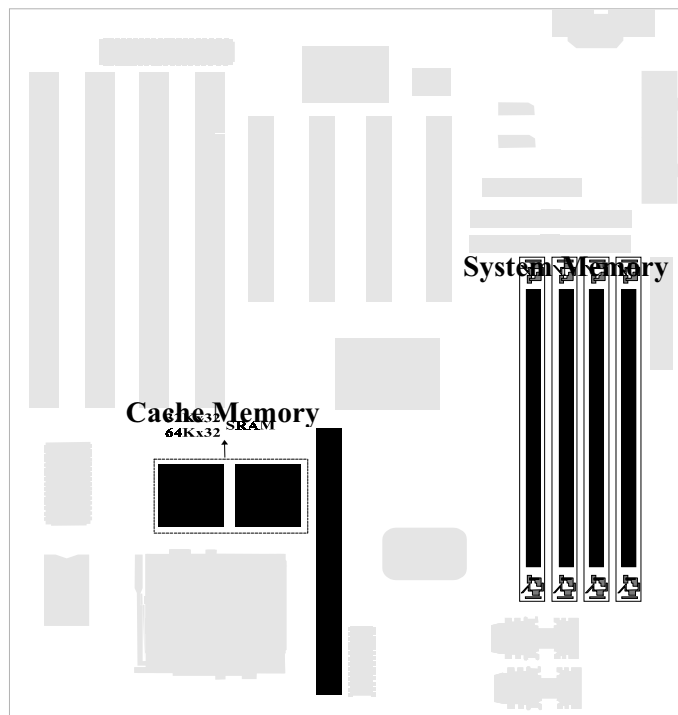
- Build-in Intel 430HX PCIset chip 32-bit PCI IDE interface with 2 IDE channels.
- Support PIO mode 4 or DMA mode 2 with transfer rate up to 22MB/sec.

⊖ **Power Management:**

- CPU cooling fan control.
- Green function Indicator
- EPA compliant.

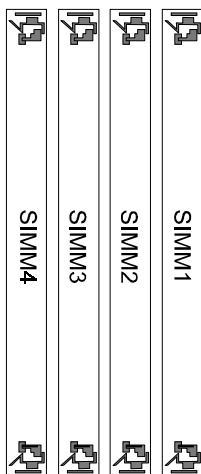
2 Memory Configurations

This chapter contains the detailed memory configuration: **System Memory and Cache Memory.**



The diagram above displays the location of SIMM Sockets, Pipelined Burst SRAM and Cache Socket on P5HX-B motherboard.

System Memory



SIMM:

P5HX-B provides tremendous flexibility DRAM configurations. It accepts a maximum of 256MB memory size. The on-board DRAM is installed with SIMM (Single-In-line-Memory Module).

There are two memory banks which support the 4M/8M/16M/32M/64M type, single and/or double-density modules. The DRAM type of SIMM1 /SIMM2 is independent of SIMM3/SIMM4.



The type of SIMM1 and SIMM2 must be same if they exist at the same time.

The following table lists a number of possible DRAM combinations.

Bank 0		Bank 1		Total
SIMM1	SIMM2	SIMM3	SIMM4	Memory Size
4MB	4MB	----	----	8MB
8MB	8MB	----	----	16MB
16MB	16MB	----	----	32MB
32MB	32MB	----	----	64MB
64MB	64MB	----	----	128MB
4MB	4MB	4MB	4MB	16MB
4MB	4MB	8MB	8MB	24MB
4MB	4MB	16MB	16MB	40MB
4MB	4MB	32MB	32MB	72MB
4MB	4MB	64MB	64MB	136MB
8MB	8MB	8MB	8MB	32MB
8MB	8MB	16MB	16MB	48MB
8MB	8MB	32MB	32MB	80MB
8MB	8MB	64MB☆	64MB☆	144MB

Continued....

Bank 0		Bank 1		Total
SIMM1	SIMM2	SIMM3	SIMM4	Memory Size
16MB	16MB	16MB	16MB	64MB
16MB	16MB	32MB	32MB	96MB
16MB	16MB	64MB☆	64MB☆	160MB
32MB	32MB	32MB	32MB	128MB
32MB	32MB	64MB☆	64MB☆	192MB
64MB☆	64MB☆	64MB☆	64MB☆	256MB

Table 2 -1. System Memory Configurations

☆ : means the memory size is not available for testing now.

Cache Memory Subsystem

Level 1 Cache

16 KB Level 1 Cache that builds in Pentium CPU includes Data Cache and Code Cache.

- 1. Data Cache: supports 8KB Write-Through and Write-Back policy.
- 2. Code Cache: supports 8KB Write-Through policy.

Level 2 Cache

L2 Cache On-board	Cache Module	Total Memory Size
0 KB	256KB	256KB
0 KB	512KB	512KB
256KB	256KB	512KB
512KB	0KB	512KB

1. If there is an "On-board 256KB L2 Cache" in the motherboard, users may either upgrade to 512KB by inserting an ECS "CM161" or COASt (2.0 or later)

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upgrade cache module of 256KB.

2. If there is not any “On-board 256KB L2 Cache” in the motherboard, users may either upgrade to 256KB or 512KB by inserting an ECS “CM161” or COAST (2.0 or later) upgrade cache module of 256KB or 512KB.

3 Jumpers and Connectors

Setting the Jumpers

Set bus frequency and CPU frequency

Core CPU Freq. (MHz)	Host Clock	JP4	Clock Multiplier	JP2☆	JP3
75	50	short 1-2, 3-4	1.5	short 1-2	short 1-2
90	60	short 3-4	1.5	short 1-2	short 1-2
100	66	short 1-2	1.5	short 1-2	short 1-2
110	55	open	2	short 1-2	short 2-3
120	60	short 3-4	2	short 1-2	short 2-3
133	66	short 1-2	2	short 1-2	short 2-3
150	60	short 3-4	2.5	short 2-3	short 2-3
166	66	short 1-2	2.5	short 2-3	short 2-3
200	66	short 1-2	3	short 2-3	short 1-2

Table 3 -1. Host Clock, CPU type and Speed Settings



Cyrix 6x86 CPU does not have multiplier 1.5 and 2.5 . Leave JP2 open for Cyrix 6x86 CPU.



Cyrix 6x86 CPU and AMD K5 CPU use P-rating as the CPU frequency. Refer the following table to get the CPU core frequency. For AMD K5 CPU, check your CPU vendor for detailed information.

Cyrix 6x86	Core CPU Frequency (MHz)
P120+	100
P133+	110
P150+	120
P166+	133

Set CPU Voltage Type

Single Voltage CPU	JP11, JP12 JP13, JP14	CPU Voltage	JP10		
	short 1-2 short 1-2 short 1-2 short 1-2	3.3V (STD) (default)	short 1-2		
		3.52V (VRE)	short 3-4		
Dual Voltage CPU	JP11, JP12 JP13, JP14	CPU I/O Voltage	JP10	CPU core Voltage	JP17★
	short 2-3 short 2-3 short 2-3 short 2-3	3.3V (STD)	short 1-2	2.51V	short 1-2
				2.73V	short 3-4
				2.91V	short 5-6
		3.52V (VRE)	short 3-4	2.51V	short 1-2
				2.73V	short 3-4
				2.91V	short 5-6

Table 3 -2 CPU Voltage Settings



Check your processor documentation for correct voltage setting to avoid the damage of CPU.

Single Voltage CPU : Intel Pentium and OverDrive series, Cyrix 6x86, AMD K5.

Dual Voltage CPU: Intel Pentium with MMX technology (P55C), Cyrix 6x86L, M2 dual voltage, AMD K5 dual voltage CPU.

Set Cache Memory Size

256KB (256KB Cache on-board)	JP15 short	JP16 short 1-2
256KB (256KB Cache Module only)	JP15 open	JP16 short 1-2
512KB (on-board 256KB 32Kx32 Burst SRAM and 256KB Cache Module)	JP15 short	JP16 short 3-4
512KB (on-board 512KB 64Kx32 Burst SRAM only)	JP15 short	JP16 short 3-4
0 KB	JP15 open	JP16 open

Table 3 -3 Cache Memory Size Settings

Set CMOS RAM Clear Switch

BIOS Setting values and password are stored in CMOS RAM. To clear CMOS Data, please open your computer chassis; short JP5; power on your system carefully ; power off your system ; close your computer chassis; and then CMOS data will be cleared.

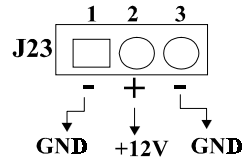
Normal (default)	JP5 short 2-3
CMOS Data Clear	JP5 short 1-2

Table 3 -4. CMOS RAM Clear Settings

Green Function

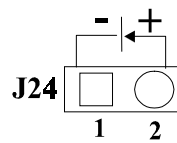
CPU Cooling Fan Control

P5HX-A provides the ability to turn the CPU cooling fan off while the system is in low-power suspend mode. Please connect the CPU cooling fan to J23 and enable “CPU Fan Power Green” function in BIOS “Power Management Setup “ in order to make it work.

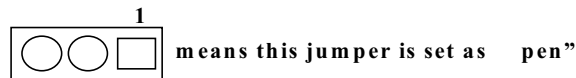
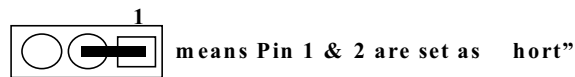


Green Function Indicator

Connect the **LED** to J24. The LED blinking indicates the system in low-power suspend mode.

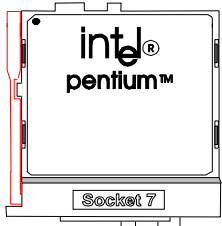
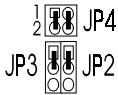


Graphic Descriptions of Jumper Settings

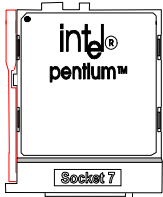


CPU Type (The Jumpers block for most used CPU)

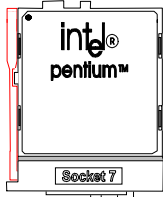
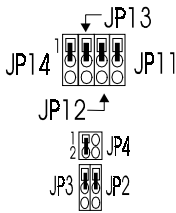
1. Intel Pentium 75MHz CPU (50MHz Host Clock) installed on board



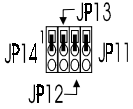
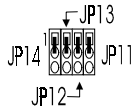
2. Intel Pentium 90MHz CPU (60MHz Host Clock) installed on board



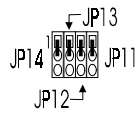
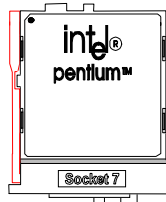
3. Intel Pentium 100MHz CPU (66MHz Host Clock) installed on board



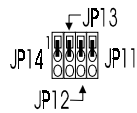
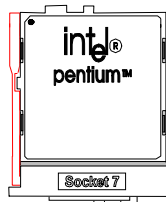
4. Intel Pentium 120MHz CPU (60MHz Host Clock) installed on board



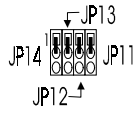
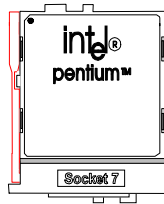
P5HX-B



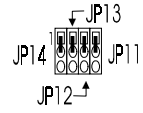
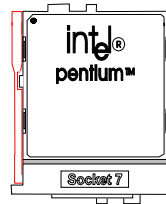
5. Intel Pentium 133MHz CPU
(66MHz Host Clock) installed
on board



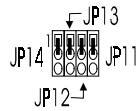
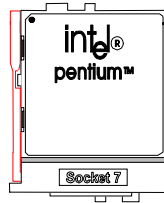
6. Intel Pentium 150MHz CPU (60MHz Host Clock) installed on board



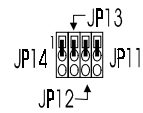
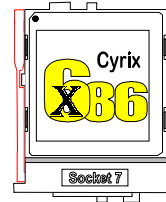
8. Intel Pentium 200MHz CPU (66MHz Host Clock) installed on board



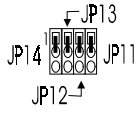
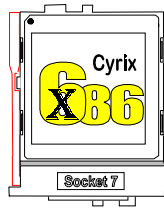
7. Intel Pentium 166MHz CPU (66MHz Host Clock) installed on board



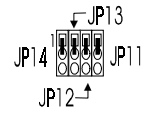
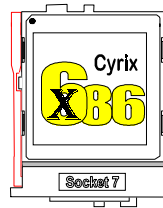
9. Cyrix 6X86 100MHz CPU (50MHz Host Clock) installed on board



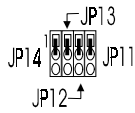
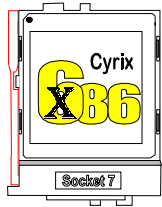
10. Cyrix 6X86 110MHz CPU
(55MHz Host Clock) installed
on board



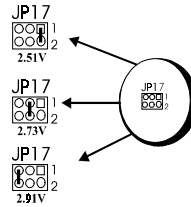
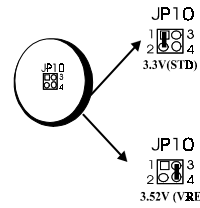
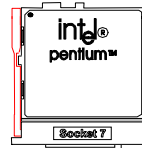
12. Cyrix 6X86 133MHz CPU
(66MHz Host Clock) installed
on board



11. Cyrix 6X86 120MHz CPU
(60MHz Host Clock) installed
on board



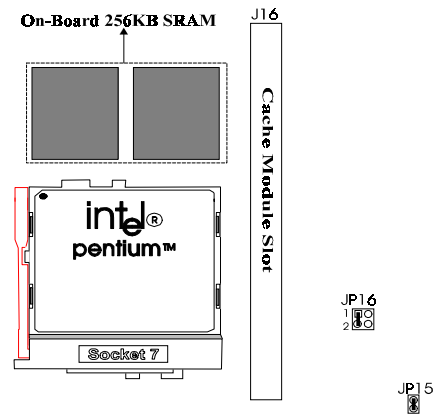
CPU Voltage Selection



Cache Memory Size

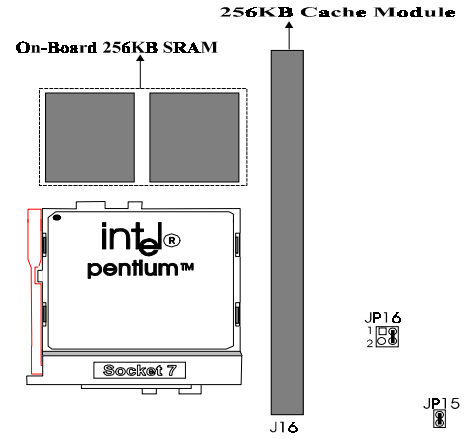
1. 256KB

a. On-Board Cache

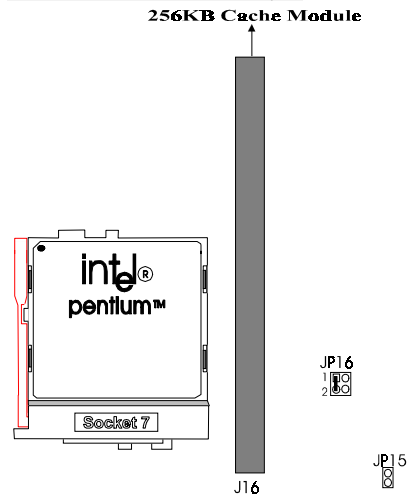


2. 512KB

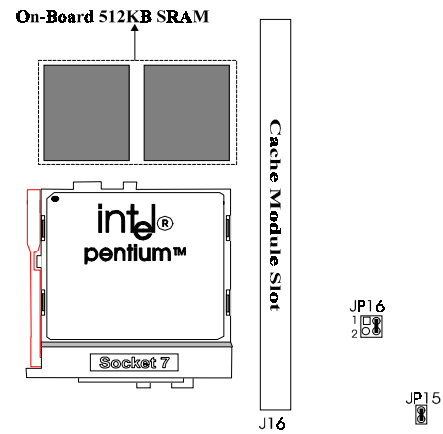
a. On-Board Cache (1)



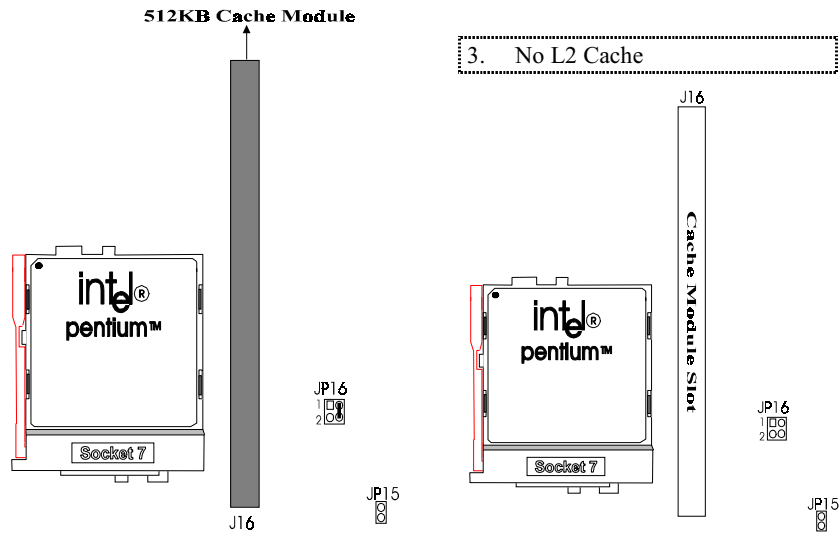
b. Cache Module Only



b. On-Board Cache (2)

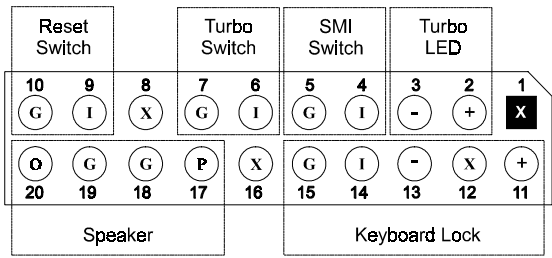
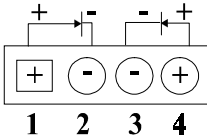


c. Cache Module Only



Connectors

There are several connectors located on the P5HX-B. Their function is listed below.

Connector	Function
J1	PS/2 Keyboard Connector
J2	AT Keyboard Connector
J3	PS/2 Mouse Connector
J4	COM1/ COM3
J5	COM2/ COM4
J6	Printer Port
J9	FDD Connector
J10	Primary IDE Connector
J11	Secondary IDE Connector
J12	 <p> X: No Function I: Input O: Output G: GND P: Power </p>
J13	<p>HDD LED</p> 
J16	Cache Module Connector
J17	USB Header (for 2 channels of USB bracket)
J19	IR Header (IBM) (manufacture option)

Continued....

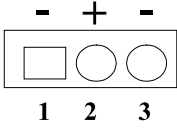
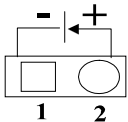
Connector	Function
J20	IR Header (Intel)
J21	PS/2 Mouse Header (for one connector of PS/2 mouse bracket)
J22	CPU Fan Connector (Normal) (manufacture option)
J23	CPU Fan Connector (Green Function)
	
J24	Green Function Indicator
	

Table 3 -5. Connectors

Board Layout

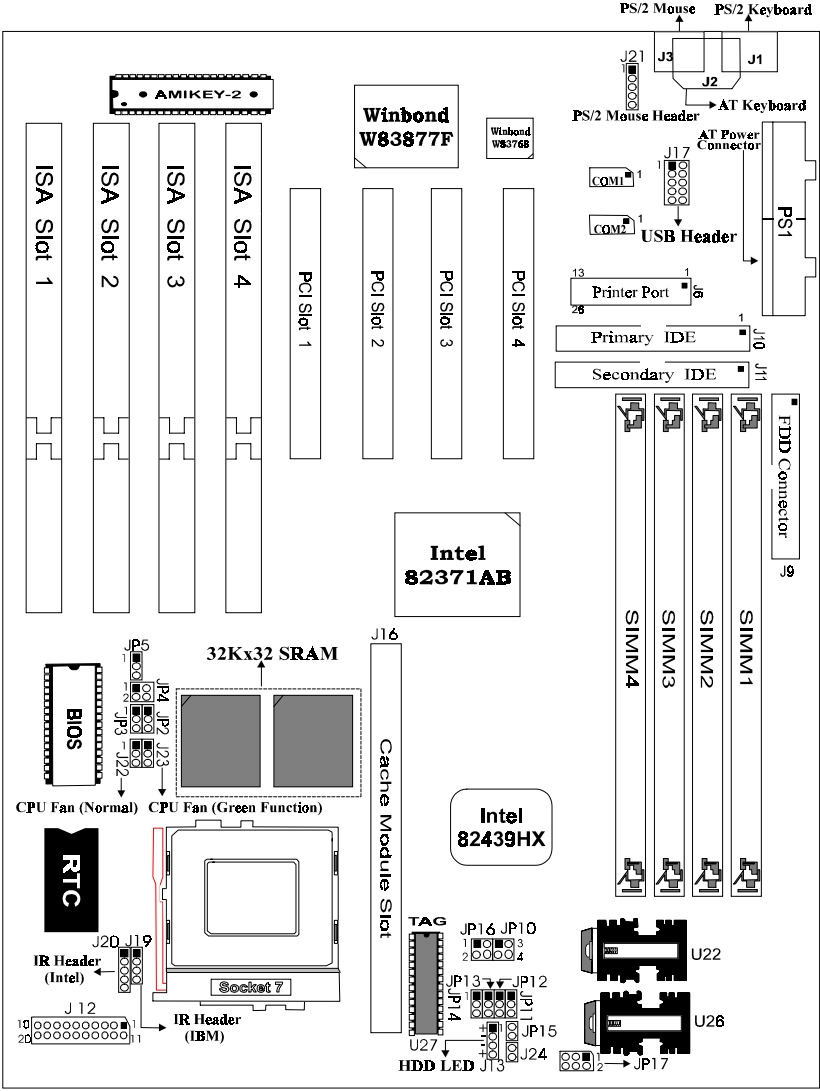


Figure 3-1. P5HX-B Mainboard Layout

4 Built-in BIOS Setup Program

SETUP Program

This chapter describes the Award BIOS setup for P5HX-B. The setup program uses a number of menus that you can specify changes to your hardware and turn the special features on or off.

To enter the BIOS setup program, users can turn on or reboot the system. Press the key when the system displays "Press DEL to enter SETUP".

The following screen will be displayed.

```

ROM PCI/ISA BIOS <<P5HX-B>>
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

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STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	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. SETUP Main Menu



The instructions at the bottom of Main Menu Screen show the items of each option.

- STANDARD CMOS SETUP** - This option allows users to check or modify the basic system configuration.
- BIOS FEATURES SETUP** - This option is used to set the various system options for the users, including the virus warning, external cache, security option, boot operations, and video BIOS shadow, etc.
- CHIPSET FEATURES SETUP** - This option allows users to control the features of chipset.
- POWER MANAGEMENT SETUP** - This option allows users to set the power saving status for reducing the power consumption.

- PNP/PCI CONFIGURATION SETUP** - This option is used to set the various system function and internal addresses of the PCI devices. Allows users to configure system IRQ and DMA to **PCI/ISA PnP** or **Legacy ISA** .
- LOAD BIOS DEFAULTS** - Users can load the BIOS default values to boot the system safely.
- LOAD SETUP DEFAULTS** - This option supports the better performance for the system. It is recommended to choose **SETUP Defaults** for the setup.
- INTEGRATED PERIPHERALS** - This option allows users to decide how many kinds peripherals need to change their I/O type , mode and used or not . This options also allows user to set the various system function and onboard PCI IDE controller.
- SUPERVISOR PASSWORD** - Password is required when entering and changing all of the SETUP option or booting your system. Users can change the current password stored in the CMOS by accessing this option.
- USER PASSWORD** - Password is required when booting your system and entering to change only the USER PASSWORD . Users can change the current password stored in the CMOS by accessing this option.
- IDE HDD AUTO DETECTION** - This option can automatic detect the hard disk drive type(s) including the number of cylinders and heads, write pre-compensation time, read/write head landing zone, and number of sectors per track.
- SAVE & EXIT SETUP** - After saving the changes what you have made in the SETUP program, then exit and reboot the system.
- EXIT WITHOUT SAVING** - Abandons all previous settings, then exit and reboot the system.

After choosing an item from the SETUP main menu, move the cursor by using the ↑,↓,→,← arrow keys and press <Enter>. To modify the setting of an option, simply press the <PgUp> or <+> and the <PgDn> or <-> keys. Press the <F2> key when changing the color setting, <F1> for a context sensitive help function, and the <ESC> key when quitting SETUP.

Standard CMOS Setup

ROM PCI/ISA BIOS <<P5HX-B>>
STANDARD CMOS SETUP
AWARD SOFTWARE, INC

Data (mm:dd:yy) : Thu, Feb 18 1996
Time (hh:mm:ss) : 17 : 58 : 42

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: Auto	0	0	0	0	0	0	Auto
Primary Slave	: Auto	0	0	0	0	0	0	Auto
Secondary Master	: Auto	0	0	0	0	0	0	Auto
Secondary Slave	: Auto	0	0	0	0	0	0	Auto
Drive A	: 1.44M, 3.5 in.							
Drive B	: None							
Video	: EGA/VGA							
Halt On	: All Errors							
		Base Memory: 640K Extended Memory: 7168K Other Memory: 384K <hr/> Total Memory: 8192K						
Esc : Quit		↑ ↓ → ← : Select Item		PU/PD/+/- : Modify				
F1 : Help		(Shift)F2 : Change Color						

Figure 4 -2. Standard CMOS SETUP Screen

Date - Allows manual setting of the electronic calendar on the mainboard.

Time - Sets the internal clock of the system which includes hour, minutes, and seconds.

Primary Master - Specifies the physical and electronic properties of the standard hard disk drives installed. Relevant specifications include the type, number of cylinders (CYLS), heads (HEAD), write pre-compensation time (PRECOMP), read/write head landing zone (LANDZ), number of sectors per track (SECTOR), and HDD mode (MODE). Selecting "**AUTO**" in the hard disk type item avoids the necessity of loading the HDD specifications and the function of the IDE HDD Auto Detection option in the main menu. The system BIOS will automatically detect the hard drive installed on the system upon bootup.

Drive A:/B: - Specifies the capacity and format of the floppy drive installed in your system.

Video - Specifies the display adapter installed.

Halt On - Enables the system to halt on several conditions/options. The default value is set as "**All Errors**."

Base/Extended/Other Memory - A small section in the lower right corner of the screen displays the important information about your system which includes the base, extended, and other memory sizes. They are updated automatically by the SETUP program according to the status detected by the BIOS self-test. This section of the Standard CMOS SETUP screen is for viewing purpose only; therefore, manual modifications are not allowed.

BIOS Features Setup

ROM PCI/ISA BIOS <<P5HX-B>>

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	: Disabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A,C	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up NumLock Status	: On	DC000-DFFFF Shadow	: Disabled
Gate A20 Option	: Fast		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled		
		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 -3. BIOS Features Setup Screen

Virus Warning - Allows the virus warning feature for the hard disk boot sector to display a warning message and produce a beep sound whenever an attempt is made to write on the hard disk's boot sector. The default value for this option is **"Disabled."**

CPU Internal Cache - Enables the internal 16KB code/data cache of the Intel Pentium CPU when set to **"Enabled"** (default).

External Cache - Enables the on-board secondary cache (either standard non-burst or burst cache) when set to **"Enabled"** (default).

Quick Power On Self Test - Allows the power on self test to run at either a fast or a normal speed. The available options are:

- Disabled (default)
- Enabled

Boot Sequence - Selects the drive where the system would search for the operating system to run with. The available options are:

- A,C (default)
- C,A
- C,CDROM, A
- CDROM,C,A

Swap Floppy Drive - **"Enabled"** will effectively change the A: drive to B: and the B: to A: drive. **"Disabled"** (default) sets the floppy drives in their default states.

Boot Up NumLock Status - Sets the <Num Lock> key to either on or off during system boot-up. The available options are:

- On (default)
- Off

Gate A20 Option - Boosts the performance of system with software using the 80286 protected mode such as OS/2 or UNIX. This option determines the accessibility of the extended memory. The available options are:

- Fast (default)
- Normal

Security Option - Determines whether the password will be asked for in every boot (*System*), or when entering into the SETUP program (*Setup* - default). Refer to the section entitled SUPERVISOR PASSWORD for the password setting procedure.

PCI/VGA Palette Snoop - Selects "Enabled" to solve the abnormal color in Windows while using ISA MPEG and PCI VGA card. The available options are:

- Disabled (default)
- Enabled

Video BIOS Shadow - Enables the system shadowing and achieve the best performance of the system. The available options are:

- Enabled (default)
- Disabled

C8000-CBFFF, CC000-CFFFF, D0000-D3FFF, D4000-D7FFF, D8000-DBFFF, DC000-DFFFF Shadow - If you have a shadowing of the BIOS at any of the above segments, you may set the appropriate memory cacheable function to "Enabled". Otherwise, select "Disabled" (default).

Chipset Features Setup

¢ROM PCI/ISA BIOS <<P5HX-B>>
 CHIPSET FEATURES SETUP
 AWARD SOFTWARE, INC.

Auto Configuration : Enabled	Memory Parity/ECC Check : Disabled
DRAM Timing : <70ns	L2 Cache Cacheable Size : 64MB
DRAM RAS# Precharge Time : 3	Chipset NA# Asserted : Enabled
DRAM R/W Leadoff Timing : 7/6	
Fast RAS# To CAS# Delay : 3	
DRAM Read Burst <EDO/EPM>: x222/x333	
DRAM Write Burst Timing : x333	
DRAM Speculative Leadoff : Enabled	
Turn-Around Insertion : Disabled	
ISA Clock : PCICLK/4	
Turbo Read Leadoff : Disabled	
System BIOS Cacheable : Enabled	
Video BIOS Cacheable : Enabled	
8 Bit I/O Recovery Time : 1	
16 Bit I/O Recovery Time : 1	
Memory Hole At 15M-16M : Disabled	ESC : Quit ¤↵↵↵: Select Item
Peer Concurrency : Enabled	F1 : Help PU/PD/+/- : Modify
Chipset Special Features : Enabled	F5 : Old Values (Shift) F2 : Color
DRAM ECC/PARITY Select : Parity	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Figure 4 -4. Chipset Features Setup Screen

Auto Configuration - Loads the default values, if “Enabled”, for the DRAM and cache options. Otherwise, “Disabled” allows you to program each option as required. The available options are:

- Enabled (default)
- Disabled

DRAM Timing - Configures the DRAM read/write timing for the maximum performance. The available options are:

- <70ns (default)
- <60ns

DRAM RAS# Precharge Time - Selects RAS# precharge time for DRAM access. The available options are:

- 3 (default)
- 4

DRAM R/W Leadoff Timing - Determines the leadoff time for R/W to the cache. The available options are:

- 7/6 (default)
- 6/5

Fast RAS# To CAS# Delay - Selects the RAS-to-CAS delay time for DRAM access. The available options are:

- 3 (default)
- 2

DRAM Read Burst <EDO/SPM> - Determines the timing for burst read to the cache . If your DRAM type is EDO DRAM , we suggest you select x222(EDO) timing to get a better performance . The available options are:

- x222/ x333 (default)
- x333/ x444
- x444/ x444

DRAM Write Burst Timing - Determines the timing for burst write to the cache . If your DRAM type is EDO DRAM , we suggest you select x222(EDO) timing to get a better performance . The available options are:

- x333 (default)
- x222
- x444

DRAM Speculative Leadoff - Determines the timing for speculative leadoff to the cache . The available options are:

- Enabled (default)
- Disabled

Turn-Around Insertion - Determines whether or not to access turn-around insertion . The available options are:

- Disabled (default)
- Enabled

ISA Clock - ISA clock divide by 4 or 3 depending on PCI bus clock. Users can refer to the formula for clear figure. (**ISA Clock = PCI Clock / 3 or ISA Clock = PCI Clock / 4**). The available options are:

- PCICLK/4 (default)
- PCICLK/3

Turbo Read Leadoff - This bit will affect the read leadoff timings of the DRAM. When this bit is set, it will get a 1 HCLK pull-in of all read leadoff timings. The available options are:

- Disabled (default)
- Enabled

System BIOS Cacheable - Allows caching of the different segments where there is system BIOS shadowing. The available options are:

- Enabled (default)
- Disabled

Video BIOS Cacheable - Allows caching of the different segments where there is video BIOS shadowing. The available options are:

- Enabled (default)
- Disabled

8 Bit I/O Recovery Time - Defines the 8-bit I/O recovery time with one of the following system clock options. The available options are:

- 1 (default)
- 2/3/4/5/6/7/8/NA

16 Bit I/O Recovery Time - Defines the 16-bit I/O recovery time with one of the following system clock options. The available options are:

- 1 (default)
- 2/3/4/NA

P5HX-B

Memory Hole At 15M-16M - Enables this option to reserve the certain space in memory for ISA cards. The available options are:

- Disabled (default)
- Enabled

Peer Concurrency - Determines whether or not the CPU allowed to run DRAM/L2 cycles when non-PHLD PCI master devices are targeting peer device . The available options are:

- Enabled (default)
- Disabled

Chipset Special Features - Enable/Disable chipset special features . The available options are:

- Enabled (default)
- Disabled

DRAM ECC/PARITY Select - Allows user configure the DRAM error check method is ECC or Parity check . The available options are:

- Parity (default)
- ECC

Memory Parity/ECC Check - Determines the memory check function enabled or disabled and the function can enable only under the DRAM with parity bit support . Otherwise , select auto . BIOS can auto-detect whether DRAM support DRAM ECC/Parity function . The available options are:

- Disabled (default)
- Enabled
- Auto

L2 Cache Cacheable Size - Determines the L2 cache cacheable size 64MB or 512MB . The available options are:

- 64MB (default)
- 512MB

Chipset NA# Asserted - Determines whether enable the Next Address (NA#) cycle . The available options are:

- Enabled (default)
- Disabled

Power Management Setup

ROM PCI/ISA BIOS <<P5HX-B>>
Power MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management : Disabled	** Power Down & Resume Events **
PM Control by APM : Yes	IRQ3 (COM 2) : ON
Video Off Method : DPMS	IRQ4 (COM 1) : ON
CPU Fan Power Green : Enabled	IRQ5 (LPT 2) : ON
MODEM Use IRQ : NA	IRQ6 (Floppy Disk) : ON
Doze Mode : Disabled	IRQ7 (LPT 1) : ON
Standby Mode : Disabled	IRQ8 (RTC Alarm) : OFF
Suspend Mode : Disabled	IRQ9 (IRQ2 Redir) : ON
HDD Power Down : Disabled	IRQ10 (Reserved) : ON
**Wake Up Events In Doze & Standby **	IRQ11 (Reserved) : ON
IRQ3 (Wake-Up Event) : ON	IRQ12 (PS/2 Mouse) : ON
IRQ4 (Wake-Up Event) : ON	IRQ13 (Coprocesor) : ON
IRQ8 (Wake-Up Event) : OFF	IRQ14 (Hard Disk) : ON
IRQ12 (Wake-Up Event) : ON	IRQ15 (Reserved) : ON
	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 Screen

Power management - Allows users determine how often the Power management activating . The available options are:

- Disable (default)
- Max Saving
- Min Saving
- User Define

PM Control by APM - Sets the power management (PM) control by the APM. The available options are:

- Yes (default)
- No

Video Off Method - Sets the video power green method . The available options are:

- DPMS (default)
- V/H SYNC+Blank
- Blank Screen

MODEM Use IRQ - In order to support resume on ring and to pass APM 1.2, this option is required to be set same IRQ as the modem add-in-card used. The available options are:

- NA (default)
- 3/4/5/7/9/10/11

CPU Fan Power Green - Determines CPU Fan Power to be turned off at suspend mode or not . The available options are:

- Enabled (default)
- Disabled

Doze Mode - Sets the time interval after system inactivity when the system enters DOZE mode. The available options are:

- Disabled (default)
- 1 Hour

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- 1/2/4/6/8/10/20/30/40 Min

Standby Mode - Sets the timer interval after system inactivity when the system enters STANDBY mode. The available options are:

- Disabled (default)
- 1 Hour
- 1/2/4/6/8/10/20/30/40 Min

Suspend Mode - Sets the time interval after system inactivity when the system enters SUSPEND mode. The available options are:

- Disabled (default)
- 1 Hour
- 1/2/4/6/8/10/20/30/40 Min

HDD Power Down - Sets the time to power down HDD in standby mode. The available options are:

- Disabled (default)
- 1....15 Min

Wake Up Events In Doze & Standby

IRQ 3/4/8/12 (Wake-Up Event) - Sets the wake-up event to “**ON**” or “**OFF**” while system enters the suspend mode.

Power Down & Resume Events

Power Down Activities - The manual also lists the Power Management SETUP (PM) events by which the system wakes up from STANDBY or SUSPEND modes.

Switch the following parameters to “**ON**” or “**OFF**”:

- COM Ports Accessed
- LPT Ports Accessed
- Drive Ports Accessed
- IRQ3 (COM2)
- IRQ4 (COM1)
- IRQ5 (LPT2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

PNP/PCI CONFIGURATION Setup

```

ROM PCI/ISA BIOS <<P5HX-B>>
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.
Resources Controlled By : Auto
Reset Configuration Data : Disabled
PCI IRQ Activated By : Level
PCI IDE IRQ Map To : PCI-AUTO
Primary IDE INT# : A
Secondary IDE INT# : B
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 -6. PNP/PCI CONFIGURATION SETUP Screen

Resources Controlled By - Allows user what kind IRQs assignment to be used .
“Manual” or **“Automatic”** definition . The available options are:

- Auto (default)
- Manual



The default of “Resources Controlled By” is Auto. If users set Manual option for the setting, “IRQ-3 / IRQ-4 / IRQ-5 / IRQ-7 / IRQ-9 / IRQ-10 / IRQ-11 / IRQ-12 / IRQ-14 / IRQ-15 / DMA-0 / DMA-1 / DMA-3 / DMA-5 / DMA-6 / DMA-7 assigned to” options below will be shown on the screen.

Reset Configuration Data - Determines whether store in ESCD data want to clear .
This is a one shot switch . The available options are:

- Enabled (default)
- Disabled

IRQ-3 / IRQ-4 / IRQ-5 / IRQ-7 / IRQ-9 / IRQ-10 / IRQ-11 / IRQ-12 / IRQ-14 /
IRQ-15 / DMA-0 / DMA-1 / DMA-3 / DMA-5 / DMA-6 / DMA-7 assigned to -
Users can select resources controlled by **“manual”** method to fix legacy ISA card
IRQ & DMA in Plug & Play problem . Legacy card has the highest priority to use
someone IRQ# & DMA# which one assigned by manual . The available options
are:

- Legacy ISA (default of IRQ-3 / IRQ-4 / IRQ-7 / IRQ-14 / IRQ-15 assigned to)
- PCI/ISA PnP (default of IRQ-5 / IRQ-9 / IRQ-10 / IRQ-11 / IRQ-12 / DMA-0 /
DMA-1 / DMA-3 / DMA-5 / DMA-6 / DMA-7 assigned to)

PCI IRQ Activated By - Programs the PCI IRQ to single edge or logic level.
Level/Edge sensitivity is programmed per controller. Every IRQ input for a given
bank is either **“EDGE”** or **“LEVEL”** (default) triggered.

PCI IDE IRQ Map To - Defines the IDE IRQ Routing either from the PCI Bus or the ISA Bus. The available options are:

- PCI-AUTO (default)
- PCI-SLOT 1
- PCI-SLOT 3
- ISA
- PCI-SLOT 2
- PCI-SLOT 4



If user sets this option to "ISA", both the "Primary IDE INT#" and "Secondary IDE INT#" options below will not be shown on the screen.

Primary/Secondary IDE INT# - Defines the primary/secondary IDE INT# of the PCI IDE card. The available options are:

- A (default of Primary IDE INT#)
- C
- B (default of Secondary IDE INT#)
- D



This option may not be able to configure all the values within the SETUP program according to the installed equipments (i.e., floppy drives A: & B:, hard disk drives C: & D:).

Load BIOS Defaults

In the event of a loss in memory on the configuration SETUP, the user can restore the information on the BIOS by loading its default values. Loading the BIOS defaults provides safe booting of the system.

Load Setup Defaults

SETUP defaults are considered default values with which the system will be enabled to perform better. This is due to the enabling of some options within the SETUP program. However, if problems are encountered after loading the SETUP defaults, reboot the system and load the BIOS defaults instead.

INTEGRATED PERIPHERALS

ROM PCI/ISA BIOS <<P5HX-B>>
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	
PCI Slot IDE 2nd Channel	: Enabled	
On-Chip Primary PCI IDE	: Enabled	
On-Chip Secondary PCI IDE	: Enabled	
IDE Primary Master PIO	: Auto	
IDE Primary Slave PIO	: Auto	
IDE Secondary Master PIO	: Auto	
IDE Secondary Slave PIO	: Auto	
USB Controller	: Disabled	
Onboard FDD Controller	: Enabled	
Onboard Serial Port 1	: 3F8/IRQ4	
Onboard Serial Port 2	: 2F8/IRQ3	
UART 2 Mode	: Standard	
Onboard Parallel Port	: 378H/IRQ7	
Onboard Parallel Mode	: SPP	
		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 -7. PNP CONFIGURATION SETUP Screen

IDE HDD Block Mode - Determines whether block transfer mode want to use or not . The available options are:

- Enabled (default)
- Disabled

PCI Slot IDE 2nd Channel - **Enables** or **Disables** the second IDE channel of PCI slot if users use the PCI IDE card on board. The available options are:

- Enabled (default)
- Disabled

On-Chip Primary/Secondary PCI IDE - Enables or Disables the primary/secondary PCI IDE of Intel IDE controller. Selecting "**Disabled**" can release IRQ14.

- Enabled (default)
- Disabled

IDE Primary/Secondary Master/ Slave PIO - Sets the advanced hard disk PIO transfer mode which effects your hard disk transfer rate. The program will auto detect the mode of this option you select "**Auto**". Otherwise, you must set this option by yourself. The available options are:

- Auto (default)
- Mode 0
- Mode 1
- Mode 2
- Mode 3
- Mode 4

USB Controller - Enables or Disables the USB function of Intel on-board chip. The available options are:

- Disabled (default)
- Enabled

P5HX-B

Onboard FDD Controller - Enables or Disables the FDD controller or on-board I/O chip. The available options are:

- Enabled (default)
- Disabled

Onboard Serial Port 1/2 - Sets the I/O address for serial port 1/2.

- 3F8/IRQ4 (default of Onboard serial Port 1)
- 2F8/IRQ3 (default of Onboard serial Port 2)
- 3E8/IRQ4
- 2E8/IRQ3
- Disabled

UART 2 Mode - Determines which type IR module want to use . The available options are:

- Standard (default)
- ASKIR
- HPSIR

Onboard Parallel Port - Sets the I/O address for the parallel port. The available options are:

- 378H/IRQ7 (default)
- Disabled



*If users set this option to "Disabled", the "**Onboard Parallel Mode**" option below will not be shown on the screen.*

Onboard Parallel Mode - Selects the working mode of parallel port. The available options are:

- SPP (default)
- ECP/EPP
- EPP/SPP
- ECP



1. *If users set this option to "SPP", the "**ECP Mode Use DMA**" and "**Parallel Port EPP Type**" options below will not be shown on the screen.*

2. *If users set this option to "EPP/SPP", the "**ECP Mode Use DMA**" option below will not be shown on the screen.*

ECP Mode Use DMA - Selects the DMA channel of ECP Mode to transfer your data. The available options are:

- 3 (default)
- 1

Parallel Port EPP Type - Determines what version EPP protocol support . The available options are:

- EPP1.7 (default)
- EPP1.9

SUPERVISOR PASSWORD

The SUPERVISOR PASSWORD utility allows you to set, change, and disable the password which is stored in the BIOS. To change the password setting, press <Enter> on the SUPERVISOR PASSWORD option of the main menu and then type the new password.

Configure the Security Option within the BIOS Features Setup corresponding to the setting in this utility. SUPERVISOR PASSWORD access right hither than USER PASSWORD .

The password can be at most 8 characters long. The program will require you to confirm the new password before it exits and will enable the utility. To disable the SUPERVISOR PASSWORD, press the <F1> when the program asks you to enter the new password.

USER PASSWORD

USER PASSWORD only can be used when the system is booting . Users only can enter SETUP screen to change the USER PASSWORD.

The password can be at most 8 characters long. The program will require you to confirm the new password before it exits and enables the utility. To disable the USER PASSWORD, press the <F1> as the program asks you to enter the new password.

IDE HDD Auto Detection

The IDE HDD Auto Detection provides auto configuration of the hard drive installed in the system. It supports LBA, Large, and Normal modes. If the system's hard disk drive has a capacity of over 528MB and supports LBA functions, you may enable either the LBA mode or the Large mode. On the other hand, if the hard disk drive's capacity is over 528MB but does not support LBA functions, you may enable the Large mode in order to use over 528MB.



- a. *The LBA and Large modes will only appear on the screen when the installed hard disk drive is specified to support the LBA mode.*
- b. *In the case when a hard disk drive's cylinder specification exceeds 1024, and does not support the LBA functions, only the Large mode will be displayed on the screen.*
- c. *With a hard disk drive supporting cylinders below 1024, only the Normal mode will appear on the screen. The Normal mode will*

also be shown on the screen under conditions a & b above.

- d. Hard disk drives with less than 528MB total capacity must be set to Normal mode when combined with either old BIOS versions or the Award BIOS.



LBA and Large modes are new specifications which may not be fully supported by all operating systems. An example of which is the current version of UNIX System (R3.2.4) which is still unable to support the LBA function. Therefore, determine the specifications of your hard disk drive and operating system before selecting the drive's mode.

After pressing the <Enter> key on this item of the main menu, the display screen will show the following screen.

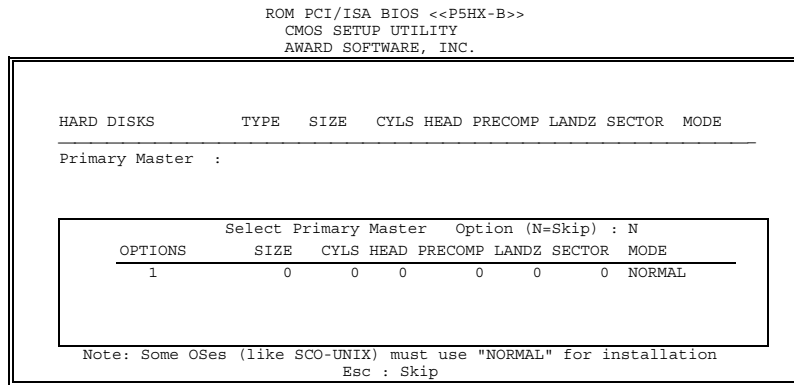


Figure 4 -8. IDE HDD Auto Detection Screen

Once the program detects the type of hard disk installed, it will display the relative information such as the type, cylinders, heads, write pre-compensation, landing zone, number of sectors per track, size and mode. A message asking you to accept the IDE HDD detected will also be flashed on the screen.

Quitting SETUP

After making all modifications in the SETUP program, go to the option "Save & Exit SETUP" then press the <Enter> key. The program will display the following screen.

Press <Y> to confirm the changes made, and the <N> or the <ESC> keys if further modifications are still necessary before exiting the SETUP program. Once the <Y> key is pressed, the system will automatically exit the program and reboot. However,

if you want to cancel all changes made under the SETUP program, go to the option "Exit Without Saving".

Press <Y> and the system will exit the SETUP program then reboot without saving any of the changes made.



You may also use the <F10> key to save the new settings.