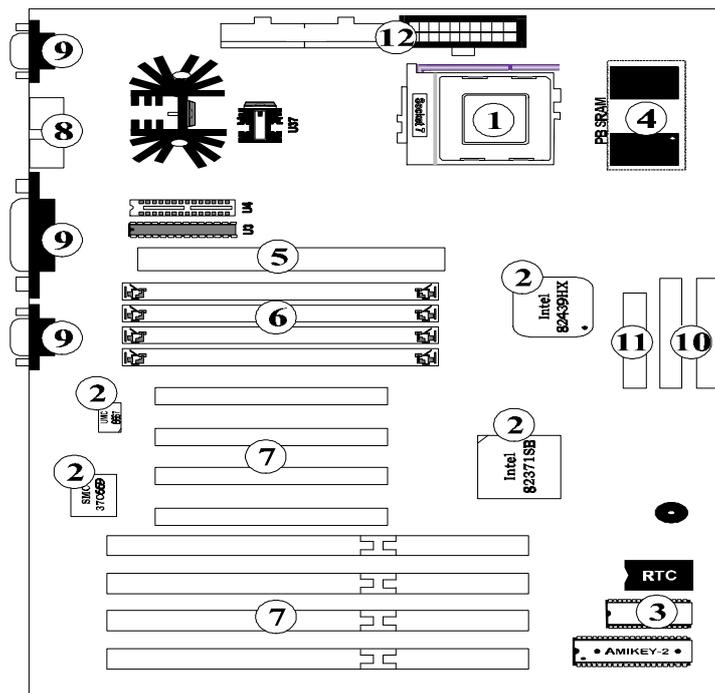


1 Introduction

Mainboard Description



- | | |
|-----------------------------|-----------------------------|
| ① Processor | ⑦ Expansion Slots |
| ② Chipset | ⑧ 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-A

P5HX-A is a new generation ATX form factor Pentium PCI mainboard using Intel 430HX PCIset (TXC, PIIX 3) and SMC 37C669 I/O Chip. It delivers great performance with industry standard EDO memory and PB SRAM cache with concurrent PCI 2.1, APM, Plug & Play, PCI Bus Master IDE, and parity / ECC...etc. P5HX-A is designed to run rich business applications.

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+
Cyrix 6x86 L

2. Chipset:

Intel 430HX 82439HX (TXC) / 82371AB (PIIX3)
SMC 37C669 (SUPER I/O)

3. System BIOS:

Award BIOS

4. L2 On-board Cache:

Provide Pipleined Burst SRAM 256/512 KB
On-board cache 256KB / 512KB

5. L2 Cache Module :

An optional ECS M161" or later version of upgrade cache module can be inserted to expand the cache memory size to 256KB or 512KB.
An OASt 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. PS/2 Mouse & Keyboard Set:

Provide Connectors for PS/2 Keyboards & PS/2 Mouse.

9. Serial / Parallel Port:

Provide two serial port connectors and one parallel port connector.

10. PCI IDE Connector:

2 Enhanced PCI IDE up to 4 IDE Device Connectors.

11. FDD Connector:

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

12. Power Supply Connectors:

P5HX-A

Provide the connectors for standard PC power supply or ATX power supply.

Features

□ 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.
- Support Cyrix 6x86 L.

□ BIOS:

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

□ Cache:

- Support the CPU 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.
 - ⌘ 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:**

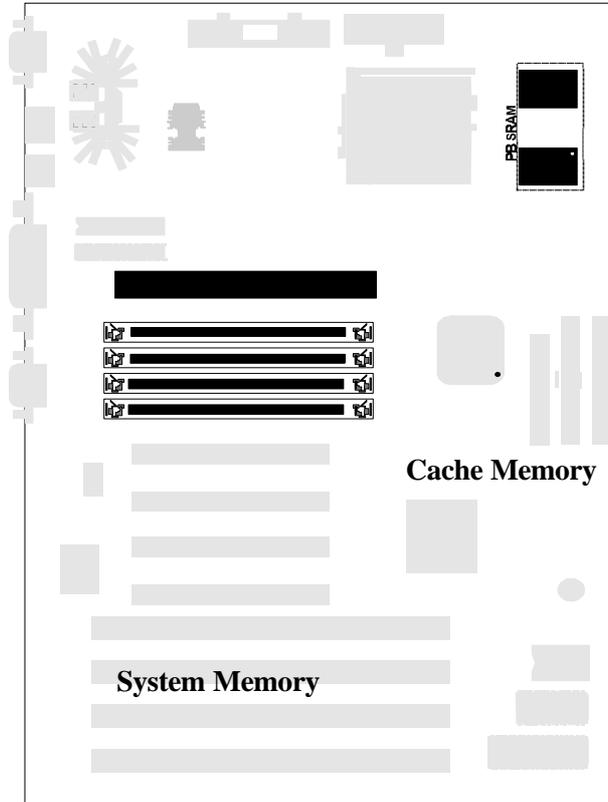
- Build-in Intel 430HX PCIset chip 32-bit PCI IDE interface with 2 IDE channels.
- Support PIO mode 4 or DMA mode 2 with transfer rate up to 22MB/sec.

□ **Power Management:**

Use ATX power supply to support software power down function which is following APM V1.2.Memory Configurations

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

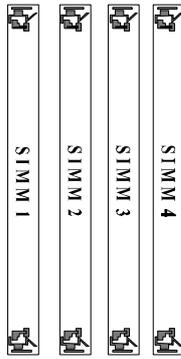
P5HX-A



The diagram above displays the location of SIMM Sockets, Pipelined Burst SRAM and L2 Cache module on P5HX-A motherboard.

System Memory

Bank 0 Bank 1



SIMM:

P5HX-A 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 1 -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 "n-board 256KB L2 Cache" in the motherboard, users may either upgrade to 512KB by inserting an ECS "M161" or COASt (2.0 or later) upgrade cache module of 256KB.
2. If there is not any "n-board 256KB L2 Cache" in the motherboard, users may either upgrade to 256KB or 512KB by inserting an ECS "M161" or COASt (2.0 or later) upgrade cache module of 256KB or 512KB.

2 Jumpers and Connectors

Setting the Jumpers

Set bus frequency and CPU frequency

Core CPU Freq. (MHz)	Host Clock (MHz)	JP9	Clock Multiplier	JP7☆	JP8
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 2 -1. Host Clock, CPU type and Speed Settings

☆ : *Cyrix 6x86 CPU does not have multiplier 1.5 and 2.5. Leave JP7 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	JP2, JP3	CPU Voltage	JP1
--------	----------	-------------	-----

Voltage CPU	JP4, JP5				
	short 1-2 short 1-2	3.3V (STD) (default)	short 1-2		
	short 1-2 short 1-2	3.52V (VRE)	short 3-4		
Dual Voltage CPU (Split Power Plane CPU)	JP2, JP3 JP4, JP5	CPU I/O Voltage	JP1	CPU core Voltage	JP17☆
	short 2-3 short 2-3 short 2-3 short 2-3	3.3V (STD)	short 1-2	2.5V	short 1-2
				2.7V	short 3-4
				2.8V	short 5-6
				2.9V	short 7-8
		3.52V (VRE)	short 3-4	2.5V	short 1-2
				2.7V	short 3-4
				2.8V	short 5-6
2.9V				short 7-8	

Table 2 -2 CPU Voltage Settings

- ☆ : If you have split power plane CPU (There are different Voltage between CPU Core and I/O), Please check CPU vendor or us in order to decide core voltage value of JP17.
-  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 6x86 L, M2 dual voltage, AMD K5 dual voltage CPU.

Set Cache Memory Size

256KB (256KB Cache Module only)	JP15 open
256KB (On-board 32Kx32 Burst SRAM only)	JP15 short
512KB (512KB Cache Module only)	JP15 open

512KB (on-board 256KB 32Kx32 Burst SRAM and 256KB Cache Module)	JP15 short
512KB (on-board 512KB 64Kx32 Burst SRAM only)	JP15 open

Table 2 -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 JP11; power on your system carefully ; power off your system ; close your computer chassis; and then CMOS data will be cleared.

Normal (default)	JP11 short 2-3
CMOS Data Clear	JP11 short 1-2

Table 2 -4. CMOS RAM Clear Settings

Set Password Check Switch

Enabled or disable BIOS password check.

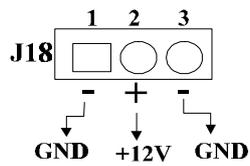
Password Check Switch	Password Check Disabled	JP18 short 1-2
	Password Check Enabled	JP18 short 2-3

Table 2 -5. Password Check Settings

Green Function

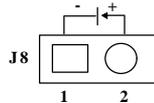
CPU Cooling Fan Control

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 J18 and enable "PU Fan Power Green" function in BIOS Power Management Setup "in order to make it work.

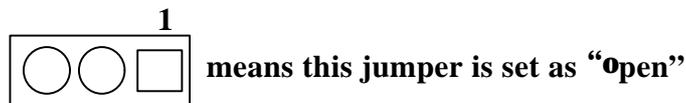


Green Function Indicator

Connect the **LED** to J8. The LED blinking indicates the system in low-power suspend mode.

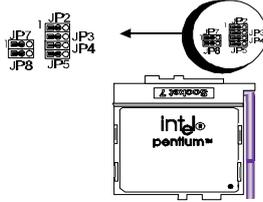


Graphic Descriptions of Jumper Settings

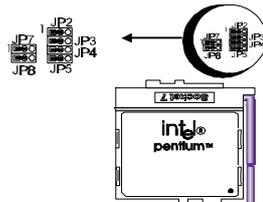


CPU Type (The jumpers block for most used CPU)

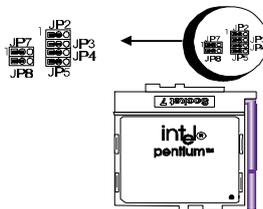
1. Intel Pentium 75MHz CPU
(50MHz Host Clock) installed
on board



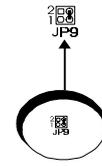
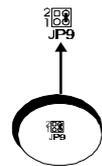
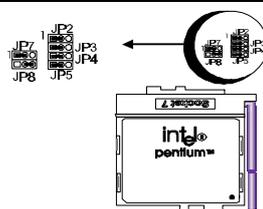
3. Intel Pentium 100MHz CPU
(66MHz Host Clock) installed
on board



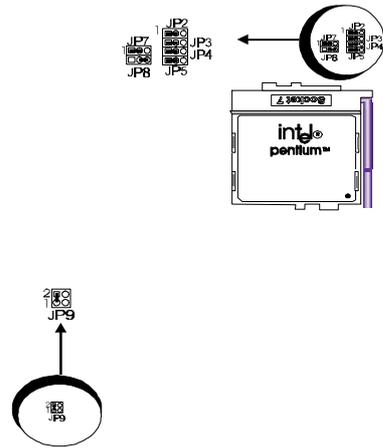
2. Intel Pentium 90MHz CPU
(60MHz Host Clock) installed
on board



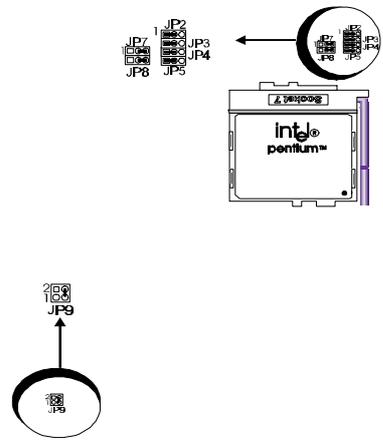
4. Intel Pentium 120MHz CPU
(60MHz Host Clock) installed
on board



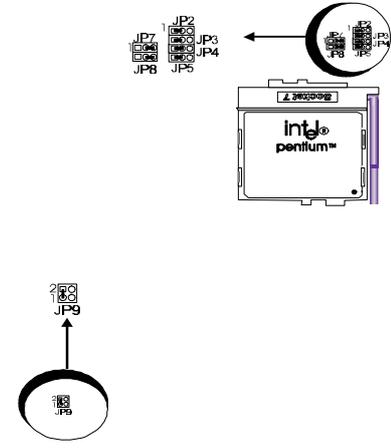
5. Intel Pentium 133MHz CPU (66MHz Host Clock) installed on board



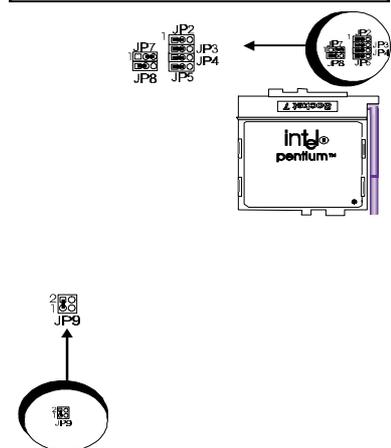
6. Intel Pentium 150MHz CPU (60MHz Host Clock) installed on board



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

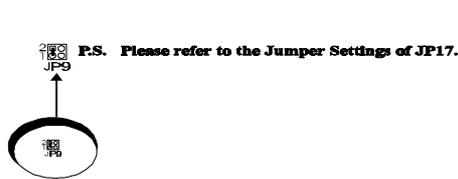
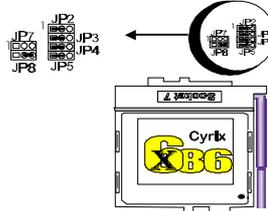
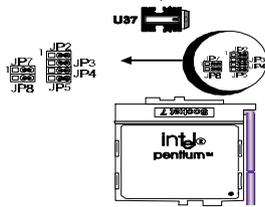


8. Intel Pentium 200MHz CPU (66MHz Host Clock) installed on board



9. Intel P55C 166MHz CPU (66MHz Host Clock) installed on board

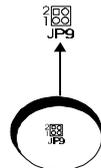
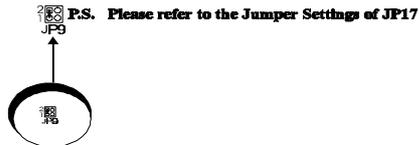
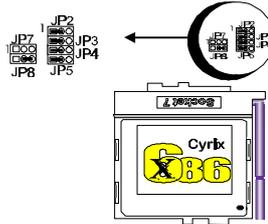
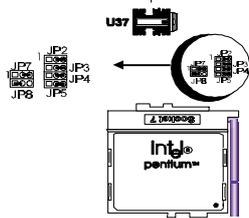
An additional Voltage Regulator is required to support Intel P55C type CPU.



10. Intel P55C 200MHz CPU (66MHz Host Clock) installed on board

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

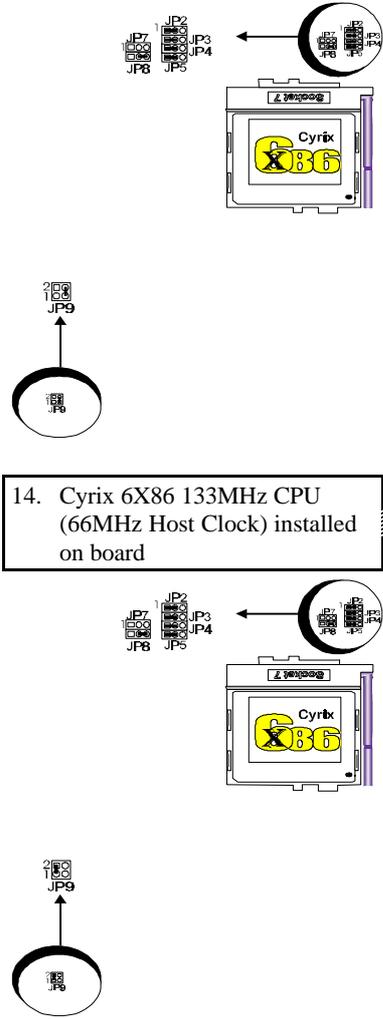
An additional Voltage Regulator is required to support Intel P55C type CPU.



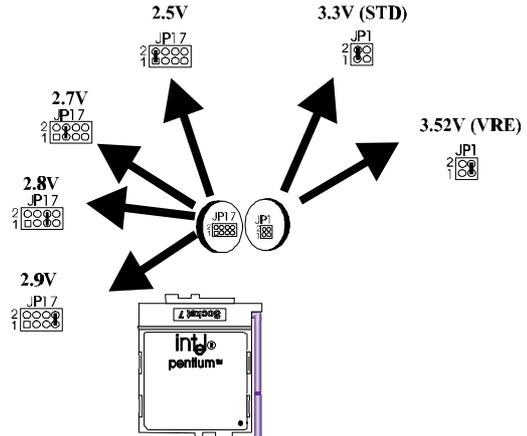
11. Cyrix 6X86 100MHz CPU (50MHz Host Clock) installed on board

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

P5HX-A



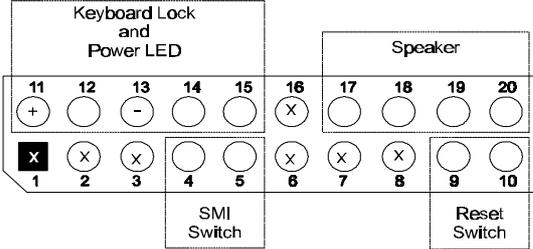
CPU Voltage Selection

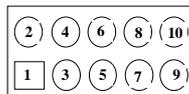


P5HX-A

Connectors

The following table lists the connectors located on the P5HX-A. They can be used to connect with some peripheral devices to enhance the operating performance of the system. Please refer to the mainboard layout figure on the next page for their positions.

Connector	Function
J1	PS/2 Keyboard Connector
J3	PS/2 Mouse Connector
J4	COM1 Port
J5	COM2 Port
J6	Parallel Port
J8	Green Function Indicator
J9	FDD Connector
J10	Primary IDE Connector
J11	Secondary IDE Connector
J12	
	X: Reserve
J13	HDD LED
J16	Cache Module
J17	USB 1/2 Header (Optional) Pin 1, 6 : VCC Pin 2, 7 : DATA - Pin 3, 8 : DATA + Pin 4, 5, 9, 10 : GND



Continued.....

Connector	Function
J18	CPU Fan Power
J19	Fast IR Header (Optional)
J20	IR Header (Intel)
J21	ATX Power ON/OFF Switch
PS1	AT Power Supply Connector
PS2	ATX Power Supply Connector

Table 2 -6. Connectors

Board Layout

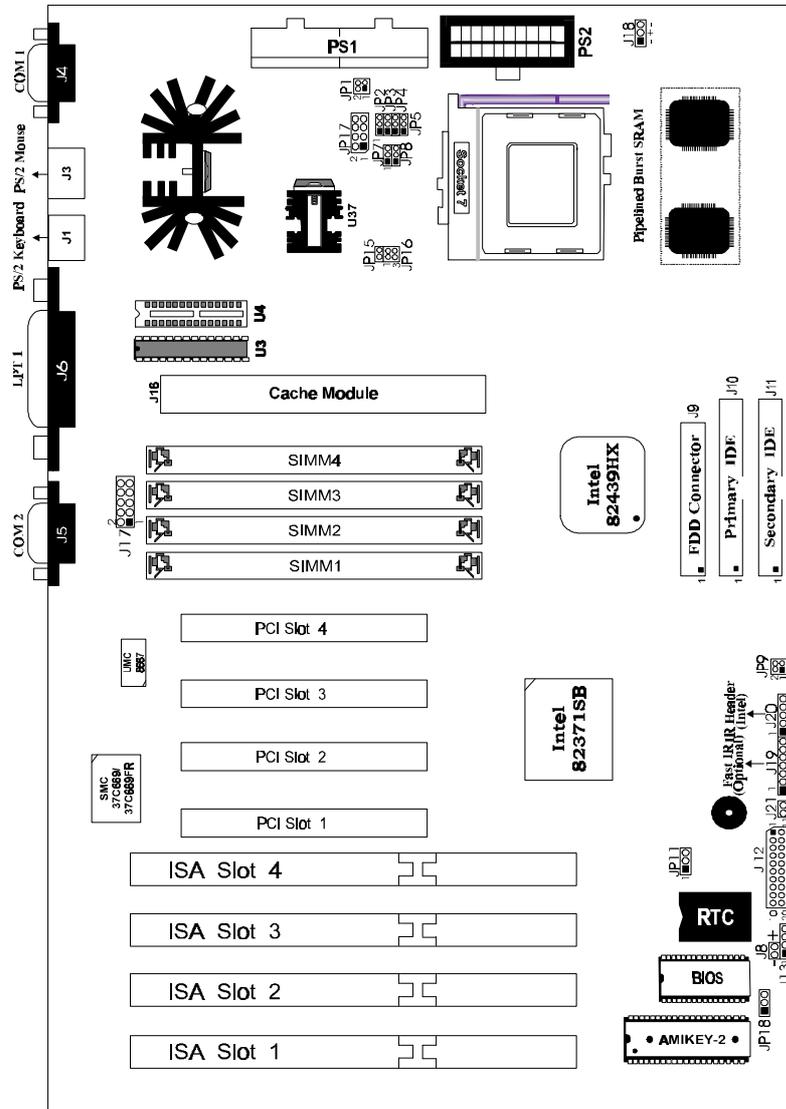


Figure 2 -1. P5HX-A Mainboard Layout

P5HX-A

- 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 option 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** - Abandon 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-A>>
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	: None	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			
					Total Memory: 8192K			
Esc : Quit			↑ ↓ → ← : Select Item			PU/PD/+/- : Modify		
F1 : Help			(Shift)F2 : Change Color					

Figure 3 -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-A>>
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 3 -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 this option is set to "**Enabled**" (default).

External Cache - Enables the on-board secondary cache (either standard non-burst or burst cache) when this options is 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 - **abled** will effectively change the A: drive to B: and the B: to A: drive. **abled** (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 by using the 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 if the password will be asked for 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 **abled** 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 **abled**. Otherwise, select **Disabled** (default).

Chipset Features Setup

OM PCI/ISA BIOS <<P5HX-A>>
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 : 4	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 3 -4. Chipset Features Setup Screen

Auto Configuration - The default values of this options is **abled** (default). When enabled, this options is for the following DRAM and cache options. Otherwise, **abled** allows you to program each option .

- Enabled (default)
- Disabled



The following items are controlled by **Auto Configuration** when users select **abled**. For this reason, their default values will be changed by the speed of CPU. These items are :
RAM RAS# Precharge Time", RAM R/W Leadoff Timing", "ast RAS# to CAS# Delay", RAM Read Burst <EDO/EPM>“, RAM Write Burst Timing” RAM Speculative Leadoff”, urn-Around Insertion” and SA Clock”.

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:

- 4 (default)
- 3

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 to select x222(EDO) timing to get a better performance . The available options are:

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

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

- x333 (default)
- x444
- x222

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

- Enabled (default)
- Disabled

Turn-Around Insertion - Determines to access turn-around insertion or not . 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 system BIOS to be cacheable. The available options are:

- Enabled (default)
- Disabled

Video BIOS Cacheable - Allows video BIOS to be cacheable. 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

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

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Peer Concurrency - Determines the CPU allowed to run DRAM/L2 cycles or not 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 users to configure the DRAM error check method. The available options are:

- Parity (default)
- ECC

Memory Parity/ECC Check - Determines the memory check function

abled” or **isabled**” and the function can enable only under the DRAM with parity bit support . Otherwise , please select **uto**” . 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 to enable the Next Address (NA#) cycle or not . The available options are:

- Enabled (default)
- Disabled

Power Management Setup

ROM PCI/ISA BIOS <<P5HX-A>>
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
	IRQ7 (LPT 1) : ON
Doze Mode : Disabled	IRQ8 (RTC Alarm) : OFF
Standby Mode : Disabled	IRQ9 (IRQ2 Redir) : ON
Suspend Mode : Disabled	IRQ10 (Reserved) : ON
HDD Power Down : Disabled	IRQ11 (Reserved) : ON
	IRQ12 (PS/2 Mouse) : ON
**Wake Up Events In Doze & Standby **	IRQ13 (Coprocesor) : ON
IRQ3 (Wake-Up Event) : ON	IRQ14 (Hard Disk) : ON
IRQ4 (Wake-Up Event) : ON	IRQ15 (Reserved) : ON
IRQ8 (Wake-Up Event) : OFF	
IRQ12 (Wake-Up Event) : 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 3 -5. Power Management Setup Screen

Power Saving Mode - Allows users to determine how often the Power Saving activates . The available options are:

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

PM Control by APM - Sets the power management (PM) control by 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

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

- Enabled (default)
- Disabled

MODEM Use IRQ - Sets the IRQ which is used by modem to have the system wake-up when the ring in signal is received.

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

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

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

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Standby Mode - Sets the timer interval 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 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 timer of the HDD when to enter the 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 "N" or "FF" when 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 "N" or "FF":

- 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)



The default values of "RQ9 (IRQ2 Redir)", "RQ10 (Reserved)" and "RQ11 (Reserved)" are **OFF** now. In the following version (V1.2), these values will be changed to **ON**.

PNP/PCI CONFIGURATION Setup

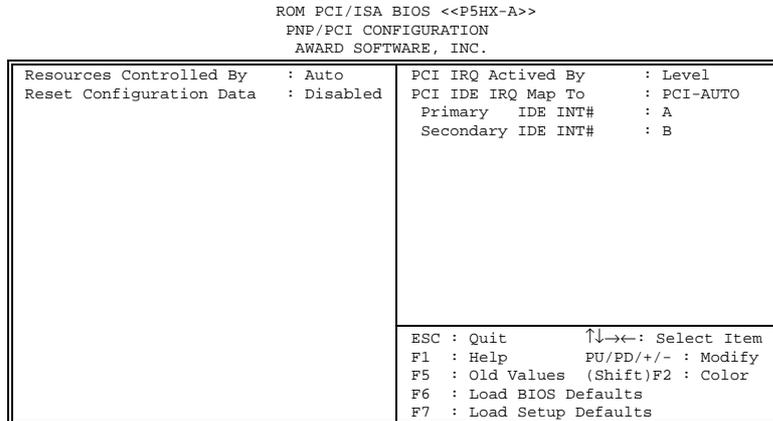


Figure 3 -6. PNP/PCI CONFIGURATION SETUP Screen

Resources Controlled By - Allows users to use what kind IRQs assignment. 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 - Clears the data in ESCD area. (Extended System Configuration). 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 **anual**” 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 **DGE**” or **EVEL**” (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)
- ISA

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- PCI-SLOT 1
- PCI-SLOT 2
- PCI-SLOT 3
- PCI-SLOT 4



If user sets this option to SA", both the primary IDE INT#" and econdary 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#)
- B (default of Secondary IDE INT#)
- C
- 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 safety 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-A>>
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

```

<pre> 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 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 </pre>	<pre> ESC : Quit ↑↓←→ : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults </pre>
---	--

Figure 3 -7. PNP CONFIGURATION SETUP Screen

IDE HDD Block Mode - Determines the block transfer mode will be used 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 *isabled* 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 when users select “*Auto*”. Otherwise, you must set this option by yourself. The available options are:

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

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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 to be used . The available options are:

- Standard (default)
- ASKIR
- HPSIR



If users set this option to "Standard" (default), the "IR Duplex Mode" option below will not be shown on the screen.

IR Duplex Mode - Allows users to control the infrared communication duplex mode. The available options are:

- Half (default)
- Full

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 "EPP/SPP", the "CP Mode Use DMA" and "Parallel Port EPP Type" options below will not be shown on the screen.*

2. *If users set this option to "SPP/SPP", the "CP 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 of EPP protocol to be supported . 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 does not supports LBA functions, you may select either the LBA mode or the Large mode. On the other hand, if the hard disk drive's capacity is over 528MB but does support LBA functions, you may select the Large mode in order to use the area 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.*

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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.

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

HARD DISKS      TYPE  SIZE  CYLS HEAD PRECOMP LANDZ SECTOR  MODE
-----
Primary Master  :

          Select Primary Master  Option (N=Skip) : N
          -----
          OPTIONS  SIZE  CYLS HEAD PRECOMP LANDZ SECTOR  MODE
          -----
          1        0    0    0    0    0    0    NORMAL

Note: Some OSes (like SCO-UNIX) must use "NORMAL" for installation
      Esc : Skip
```

Figure 3 -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.

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.

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