

# **PAM-0056I**

High Performance  
Pentium PCI Mainboard  
**User's Guide**





Edition 5.02

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# *High Performance Pentium PCI Mainboard*

## *User's Manual*

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### **WARNING**

For the system to operate normally, please make sure JP2 of the mainboard is set as below. Refer to Fig. 4 in this manual for the location JP2.



If JP2 is closed, no CMOS data can be retained.

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# CHAPTER 1 INTRODUCTION

The motherboard is a 4-layer, 2/3 baby AT size high-performance mainboard. It includes Intel 82430VX system chipset, Winbond W83877F Super I/O controller.

## 1.1 GENERAL SPECIFICATION

### Processor

- Intel Pentium P54C series, P55C series.
- Cyrix 6x86, Cyrix 6x86L; AMD-K5 and AMD-K6 series 64-bit microprocessors.
- The mainboard can run with following speeds:  
75, 90, 100, 110, 120, 133, 150, 166, 200 and 233 MHz

### Chipset

- Intel 82437TX System Controller (TVX)
- Intel 82371SB PCI ISA IDE Xcelerator
- Intel 82438VX Datapath (TDX) EDS
- Winbond W83877F Super I/O Controller

### Cache Size

- Built in 256KB Synchronized Pipelined Burst Mode SRAM to achieve the high Pentium system performance.
- Optional 512KB Synchronized Pipeline Burst Mode SRAM is also available.

**Main Memory**

- Support Mixed Memory Technologies: EDO (Extend Data Output), Standard Page Mode (SPM), Fast Page Mode (FPM), and Synchronous DRAM (SDRAM) SIMM can work together.
- Memory configurations from 4MB to 128MB are possible using combination of 512K\*32 to 8M\*32 SIMM module (32Bits no-parity 72-pin SIMM Module) and 2M\*32 to 8M\*32 SDRAM DIMM Module.
- 3.3V or 5V DRAM is supported
- DIMM socket for SDRAM (3.3V unbuffered).

**Multi I/O**

- On board Multi-I/O supports two serial, one parallel ports and floppy drive controller.
- Serial ports are 16550 Fast UART compatible.
- Parallel port has EPP and ECP capabilities.
- PS/2 mouse support.
- PS/2 keyboard supported (optional).
- IrDA supported (optional).
- Two standard USB connectors supported (optional).

**PCI IDE**

- On board supports PCI Master IDE Controller, two connectors support up to four IDE devices such as HDD, CD ROM drive and Tape Back-up drives, etc.
- PCI Master IDE controller supports PIO Mode 3 and 4 devices, I/O data transfer rate can be up to 17Mb/s. DMA mode transfer rate can be up to 22Mb/s.

**System BIOS**

- Award/AMI BIOS (128KB Flash EPROM).

**Slots**

- Four PCI slots
- Four ISA slots

**Board**

- 4 Layers

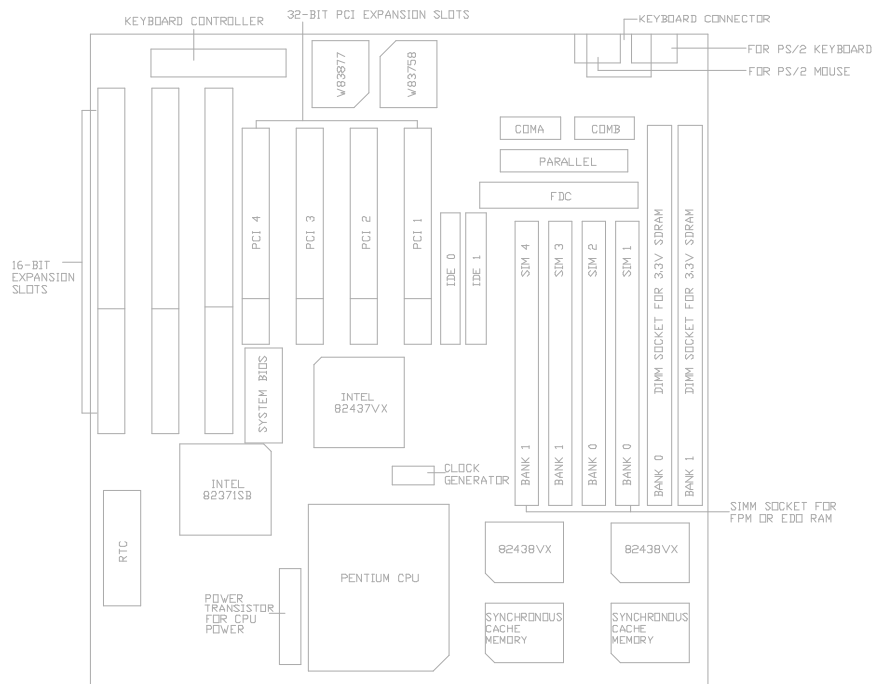
**Form Factor**

- 2/3 Baby AT Size (220 x 250mm)



## 1.2 MAINBOARD COMPONENTS

This section gives a brief description of key components on the mainboard. Please refer to Fig. 1 for components location.



**Fig. 1 Key Components of the Mainboard**

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## CHAPTER 2      MEMORY CONFIGURATION

### 2.1    SYSTEM MEMORY

The Mainboard lets user upgrade system memory via SIMM sockets and DIMM sockets on the mainboard. Four SIMM sockets (SIM1, SIM2, SIM3, SIM4) are provided for SPM, FPM and EDO DRAM SIMM and two DIMM sockets (M1, M2) are available for the SDRAM DIMM.

On board memory is divided in two banks.

Bank 0: SIM1 & SIM2 - which are assigned as row 0 (when single sided SIMMs are used) or row 1 (when double sided SIMMs are used) by the System BIOS.

OR

M1 - which is assigned as row 0, 1 for SDRAM.

Bank 1: SIM3 & SIM4 - which are assigned as row 2 (when single sided SIMMs are used) or row 2, 3 (when double sided SIMMs are used) by the System BIOS.

OR

M2 - which is assigned as row 2, 3 for SDRAM.

**Note:**    *The type of SIM1/SIM2 must be same.  
The type of SIM3/SIM4 must be same.  
SIM1/SIM2 and M1 cannot co-exist.  
SIM3/SIM4 and M2 cannot co-exist.  
Non-Parity SIMMs and DIMMs is required.  
Only 3.3V, unbuffered SDRAM DIMM can be used.*

The total memory size is 8-128MB and various configuration of DRAM types in the following table are for reference:

<b>Bank 0 (SIM1, 2 or M1)</b>	<b>Bank 1 (SIM3, 4 or M2)</b>
Single	None
None	Single
Single	Single
Single	Double
Double	Single
Double	None
None	Double
Double	Double

**Table 1: Memory Configuration**

Single means Single side SIMM Module or Single side DIMM Module. The size of Single side SIMM can be 4MB, 16MB and the size of Single side DIMM can be 8MB, 16MB, 32MB.

Double means Double side SIMM Module or Double side DIMM Module. The size of Double side SIMM can be 8MB, 32MB and the size of Double side DIMM can be 16MB, 32MB.

**\*\*Note:** *based on above chart, the different types of SIMM can be in different bank, but within same bank, the two SIMM modules must be of same type and size. Moreover, it is not recommended to installed the 5V SIMM and 3.3V DIMM at the same line.*

## 2.2 CACHE MEMORY CONFIGURATION

256KB or 512KB secondary cache system is built in with Pipeline Burst SRAM:

Cache Tag RAM Location: U12

Size of the Tag RAM: 16Kx8 or 32Kx8

Synchronous Pipeline Burst SRAM Location: U9, U10

Cache Size	Tag RAM (U12)	Data RAM U9, U10
256K16 Kx8	32Kx32	
512K	or 32Kx8	64Kx32

**Table 2: Secondary Cache Configuration**



## CHAPTER 3

## JUMPER SETTINGS AND CONNECTORS

### 3.1 CPU TYPE

#### 3.1.1 INTEL PENTIUM CPU

The pentium processors have different operation voltage. In order to using the CPU Voltage correctly, the following is the marking for identify the CPU type.



**Fig. 2a CPU Description  
(Bottom Side)**

Description :

X = Voltage Specification (S or V)

S = Standard Voltage (3.4V)

V = VRE 3.4 - 3.6V (3.5V)

Y = Timing Specification (S or M)

S = Standard EDS timings

M = Min Valid Delay Spec.

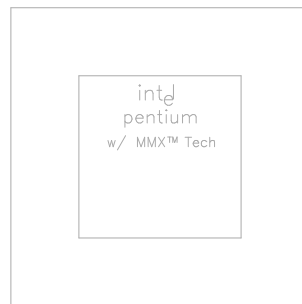
Z = Dual Processing Support ( S or U)

S = Support DP/MP/UP

U = Not tested to support DP

### 3.1.2 INTEL PENTIUM w/ MMX™ TECH (P55C) CPU

The Intel Pentium w/ MMX™ Tech (P55C) CPU is offered with dual voltage supply - 2.8V for core and 3.3V for I/O interface. The following is the marking for identify the CPU type. (The following diagram is provided as an example only. It does not necessarily indicate a valid product marking.)

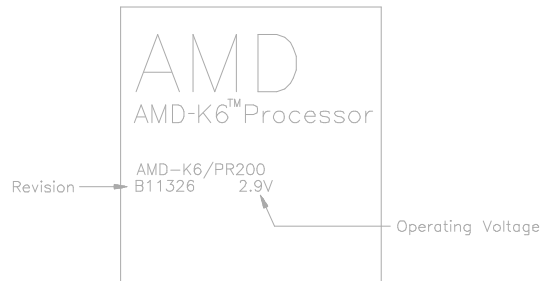


**Fig. 2b CPU Description  
(Top Side)**

	<b>I/O Voltage</b>	<b>Core Voltage</b>
<b>Intel Pentium w/ MMX™ Tech (P55C)</b>	3.3V	2.8V

### 3.1.3 AMD-K6 CPU

The AMD-K6 CPU family require dual voltage power for operation. The AMD-K6-PR166 and AMD-K6-PR200 require a voltage of 2.9V for the core and 3.3V for the I/O. The AMD-K6-PR233 require a voltage of 3.2V for the core and 3.3V for the I/O. (The following diagram is provided as an example only. It does not necessarily indicate a valid product marking.)



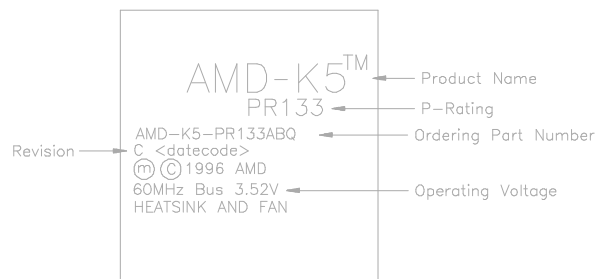
**Fig. 2c CPU Description  
(Top Side)**

Operating Voltage	I/O Voltage	Core Voltage
2.9V	3.3V	2.9V
3.2V	3.3V	3.2V



### 3.1.4 AMD-K5 CPU

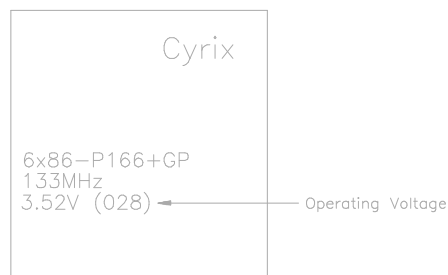
The AMD-K5 family CPU is operated on different operation voltage depending on the CPU Type. The operating voltage can be known through the marking on the surface of the CPU. (The following diagram is provided as an example only. It does not necessarily indicate a valid product marking.)



**Fig. 2d CPU Description  
(Top Side)**

### 3.1.5 CYRIX 6x86 CPU

The Cyrix 6x86 has different nominal voltage depends on different lot.  
Please refer to the CPU marking.



**Fig. 2e CPU Description  
(Top Side)**

<b>Marketing</b>	<b>Recommended Nominal Voltage</b>
3.3V or 3.52V	3.52V
028	3.52V
016	3.3V
Blank	3.52V

### 3.1.6 CYRIX 6x86L CPU

The Cyrix 6x86L has different I/O and core voltage. Please refer to the CPU marking.



**Fig. 2f CPU Description  
(Top Side)**

	<b>I/O Voltage</b>	<b>Core Voltage</b>
<b>Cyrix 6x86L CPU</b>	3.3V	2.8V

### 3.2 SETTING THE JUMPERS

The table below summarizes the functions and settings of each jumper of the motherboard.

	Function	Jumper Settings
<b>CPU Voltage Selection</b>	3.3V Single Voltage CPU For P54C, P54CT	SW1-1: off SW1-2: off SW1-3: on S1: short S2: short S3: short
	3.5V Single Voltage CPU For P54C-VRE, AMD-K5, Cyrix 6x86	SW1-1: off SW1-2: off SW1-3: off S1: short S2: short S3: short
	3.3V (I/O)/2.8V (core) Dual Voltage CPU For P55C, Cyrix 6x86L	SW1-1: on SW1-2: off SW1-3: on S1: open S2: open S3: open
	3.3V (I/O)/2.9V (core) Dual Voltage CPU For AMD-K6-PR166/PR200	SW1-1: off SW1-2: on SW1-3: on S1: open S2: open S3: open
	3.3V (I/O)/3.2V (core) Dual Voltage CPU For AMD-K6-PR233	SW1-1: off SW1-2: off SW1-3: on S1: open S2: open S3: open
To be continued...		

**Table 3A: Jumper Setting**

	Function	Jumper Settings	
<b>CPU Speed Selection</b>	For 75MHz Intel Pentium, AMD-K5-PR75 CPU	SW1-4:	off
		SW1-5:	off
		SW1-6:	on
		SW1-7:	on
		SW1-8:	off
	For 90MHz Intel Pentium, AMD-K5-PR90 and AMD-K5-PR120 CPU	SW1-4:	off
		SW1-5:	off
	SW1-6:	on	
	SW1-7:	off	
	SW1-8:	off	
For 100MHz and 233MHz Intel Pentium; AMD-K6-PR233, AMD-K5-PR100 and AMD-K5-PR150 CPU	SW1-4:	off	
	SW1-5:	off	
	SW1-6:	off	
	SW1-7:	off	
	SW1-8:	off	
For 100MHz Cyrix 6x86-P120+ CPU	SW1-4:	on	
	SW1-5:	off	
	SW1-6:	on	
	SW1-7:	on	
	SW1-8:	off	
For 110MHz Cyrix 6x86-P133+ CPU	SW1-4:	on	
	SW1-5:	off	
	SW1-6:	off	
	SW1-7:	on	
	SW1-8:	off	
For 120MHz Intel Pentium, Cyrix 6x86-P150+ CPU	SW1-4:	on	
	SW1-5:	off	
	SW1-6:	on	
	SW1-7:	off	
	SW1-8:	off	
For 133MHz Intel Pentium, AMD-K5-PR133 (REV C) and Cyrix 6x86-P166+ CPU	SW1-4:	on	
	SW1-5:	off	
	SW1-6:	off	
	SW1-7:	off	
	SW1-8:	off	
To be continued...			

**Table 3B: Jumper Setting**

	Function	Jumper Settings	
<b>CPU Speed Selection</b>	For 150MHz Intel Pentium CPU	SW1-4:	on
		SW1-5:	on
		SW1-6:	on
		SW1-7:	off
		SW1-8:	off
	For 150MHz Cyrix 6x86-P200+ CPU (for future support only)	SW1-4:	on
		SW1-5:	off
		SW1-6:	off
		SW1-7:	off
		SW1-8:	on
	For 166MHz Intel Pentium, AMD-K6-PR166 and AMD-K5-PR166 CPU	SW1-4:	on
		SW1-5:	on
		SW1-6:	off
		SW1-7:	off
		SW1-8:	off
	For 200MHz Intel Pentium and AMD-K6-PR200 CPU	SW1-4:	off
		SW1-5:	on
		SW1-6:	off
		SW1-7:	off
		SW1-8:	off
<b>DRAM Voltage Selection</b>	5V SIMM	S4:	1-2 short
		S5:	1-2 short
	3.3V SIMM	S4:	2-3 short
		S5:	2-3 short
<b>Clear RTC CMOS Data</b>	Normal	JP2:	open
	Clear	JP2:	short
<b>System ROM Selection</b>	5V Flash EPROM	JP4:	2-3 short
	12V Flash EPROM	JP4:	1-2 short

Table 3C: Jumper Setting

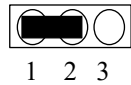
### 3.3 CONNECTION THE MOTHERBOARD

Once the mainboard have been fastened into the system case, the next step is to connect the internal cables. The internal cables are wire leads with plastic female connectors that attach to the connectors. The mainboard connectors have varying numbers of pins and are the points of contact between the mainboard and other parts of the computer.

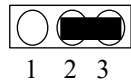
A description of each connector and its connector pins follows. See Fig. 3 for the location of the connectors on the mainboard.

*Note:* Before making connectors on the board, make sure that power to the system is turned off.

#### 3.3.1 JUMPER PRESENTATION



Pins 1 and 2 are shorted with a jumper cap.



Pins 2 and 3 are shorted with a jumper cap.



The jumper is shorted when the jumper cap is placed over the two pins of the jumper.



The jumper is open when the jumper cap is removed from jumper.



Dip Switch set to ON position.



Dip Switch set to OFF position.

#### 3.3.2 JUMPER CONVENTION OF THE MOTHERBOARD

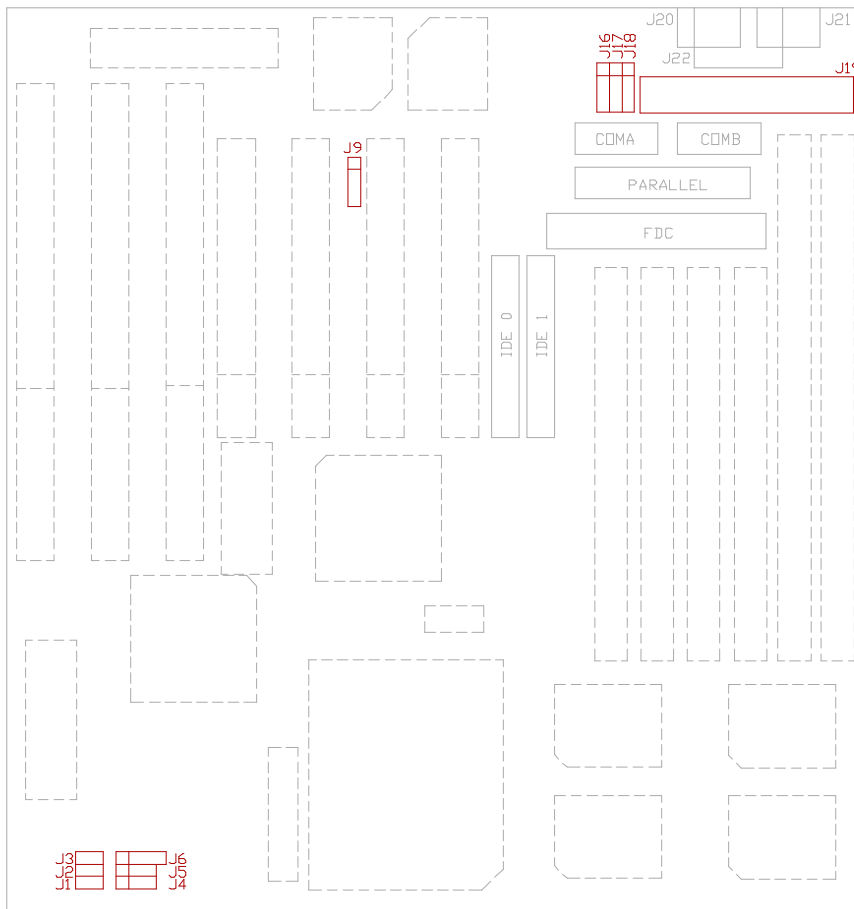
Different colour of jumper caps (mini-jumpers) are used on the board to represent different usage of the jumpers:

Red : CPU Clock setting

Black: Other



### 3.3.3 CONNECTOR LOCATIONS




**Fig. 3 Connector Location**

## 3.4 CONNECTORS

### 3.4.1 J1 - RESET SWITCH CONNECTOR

Attach the Reset switch cable to this connector. The Reset switch restarts the system.

J1	Description
	Reset
	Normal (default)

**Table 4: J1 Reset Switch Connector**

### 3.4.2 J2 - SMI SWITCH

J2 is for SMI Break Switch Setting. When J2 is trigger from OPEN to CLOSE and back to OPEN, the system would suspend immediately.

### 3.4.3 J3 - SUSPEND LED CONNECTOR

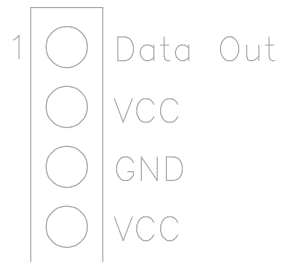
J3 is usually connected to a LED on front of the system case. If the system board select is in Suspend mode, the LED will be off.



**Fig. 4 J3 -Turbo LED**

### 3.4.4 J4 - SPEAKER CONNECTOR

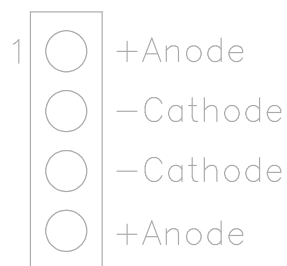
J4 is a four pins connector, which is used to connect with the system speaker.



**Fig. 5 J4 - Speaker Connector**

### 3.4.5 J5 - HDD LED CONNECTOR

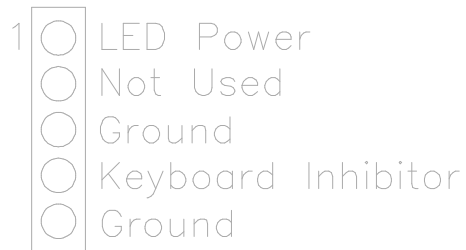
J5 is usually connected to a HDD LED on front of the system case. If the HDD is in operation, the indicator lights during operation.



**Fig. 6 J5 - HDD LED**

### 3.4.6 J6 - KEYLOCK CONNECTOR

J6 is a keylock connector that enables and disables the keyboard.



**Fig. 7 J6 - Keylock Connector**

### 3.4.7 J9 - OPTIONAL IrDA AND FAST IR CONNECTOR

J9 is the IrDA and Fast IR connector that using the UART2 as interface for IrDA, HP SIR and optional Fast IR.



**Fig. 8 J9 - Optional IrDA and Fast IR Connector**

### 3.4.8 J10 - PRIMARY IDE CONNECTOR

The bootable Hard Disk must connect to this Primary IDE Connector. It is located in between the PCI Slot and the SIMM sockets. Please refer to Fig. 3 for its location.

### 3.4.9 J11 - SECONDARY IDE CONNECTOR

J11 locates right to J10, the Primary IDE Connector. Please refer to Fig. 3 for its location.

### **3.4.10 J12 - FLOPPY DRIVE CONTROLLER**

J12 locates above the SIMM sockets. This Floppy drive controller also supports 2.88M FDD format.

### **3.4.11 J13 - PARALLEL PORT**

J13 is above J12, please refer to Fig. 3 for its location. Pin 1 is on the up left hand side.

### **3.4.12 J14 - SERIAL PORT 1**

Both COMA and B are 16550 fast UART compatible. J14 is above J13, please refer to Fig. 3 for its location. Pin 1 is on the up left hand side.

### **3.4.13 J15 - SERIAL PORT 2**

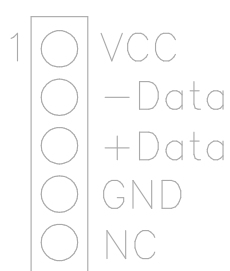
J15 is right to J14, please refer to Fig. 3 for its location. Pin 1 is on the up left hand side.

### **3.4.14 J16 - USB1 CONNECTOR (OPTIONAL)**

A five-pin connector, located left side of J17, is used to connect with the USB (Universal Serial Bus) cable. It is defined as USB1, and it's pin assignment is same as J17.

### 3.4.15 J17 - USB0 CONNECTOR (OPTIONAL)

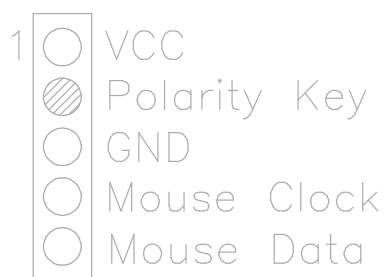
A five-pin connector, located left side of the power connector J19, is used to connect with the USB cable. It is defined as USB0.



**Fig. 9 USB0 Connector**

### 3.4.16 J18 - EXTENSION PS/2 MOUSE CONNECTOR

J18 is a five-pin connector with polarity key located on the left side of the power connector J19. It is connected with the PS/2 mouse connector cable to extend the PS/2 mouse connector to the rear of the system case.



**Fig. 10 Extension PS/2 Mouse Connector**

### 3.4.17 J19 - POWER SUPPLY CONNECTOR

The power supply connector has two six-pin male header connectors. Plug the dual connectors from the power directly onto the board connector.

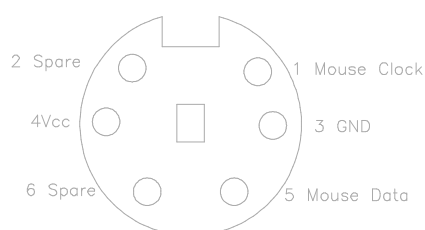
Pin	Description
1	Power Good (Orange)
2	+5 VDC (Red)
3	+12 VDC (Yellow)
4	-12 VDC (Blue)
5	Ground (Black)
6	Ground (Black)
7	Ground (Black)
8	Ground (Black)
9	-5 VDC (White)
10	+5 VDC (Red)
11	+5 VDC (Red)
12	+5 VDC (Red)

**Table 5: J19 - Power Supply Connector**



### 3.4.18 J20 - OPTIONAL PS/2 MOUSE CONNECTOR

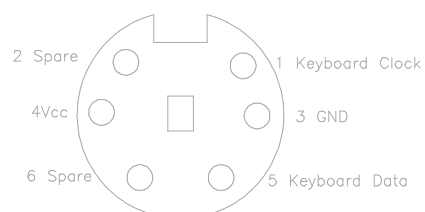
An optional six-pin female mini DIN connector locates at the rear of the mainboard. Plug the jack on the PS/2 mouse cable into this connector.



**Fig. 11 J20 - PS/2 Mouse Connector**

### 3.4.19 J21 - OPTIONAL PS/2 KEYBOARD CONNECTOR

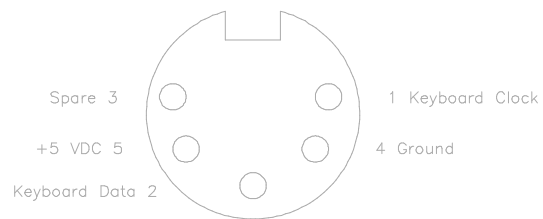
An optional six-pin female mini DIN connector locates at the rear of the mainboard. Plug the jack on the PS/2 keyboard cable into this connector.



**Fig. 12 J21 - PS/2 Keyboard Connector**

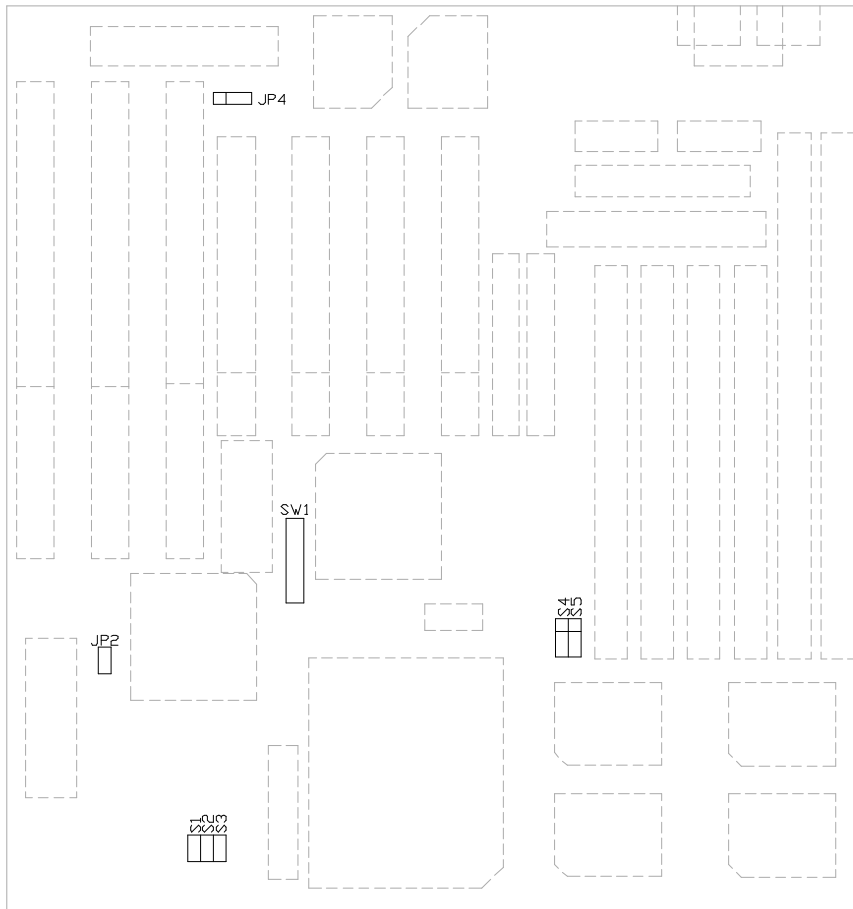
### 3.4.20 J22 - KEYBOARD CONNECTOR

A standard five-pin female DIN keyboard locates at the rear of the mainboard. Plug the jack on the keyboard cable into this connector.



**Fig. 13 J22 - Keyboard Connector**

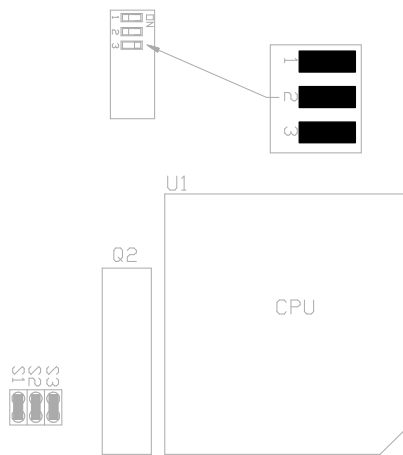
### 3.5 GRAPHICAL DESCRIPTIONS OF JUMPER SETTINGS



**Fig. 14 Jumper Location**

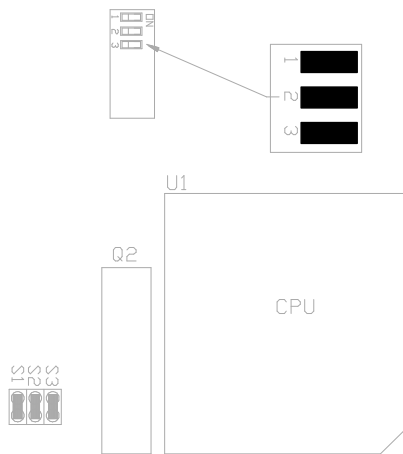
### 3.5.1 CPU VOLTAGE SELECTION

1. For 3.3V Single Voltage CPU: P54C, P54CT



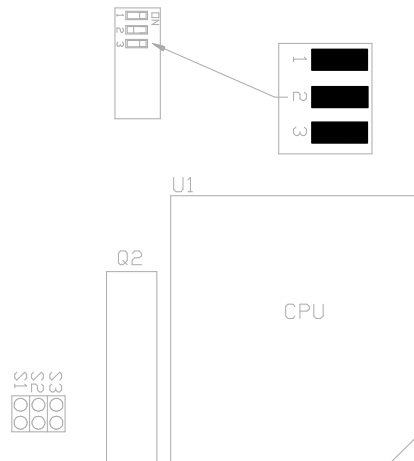
**Fig. 15a CPU Type - 3.3V**

2. 3.5V Single Voltage CPU: P54C-VRE, AMD-K5, Cyrix 6x86



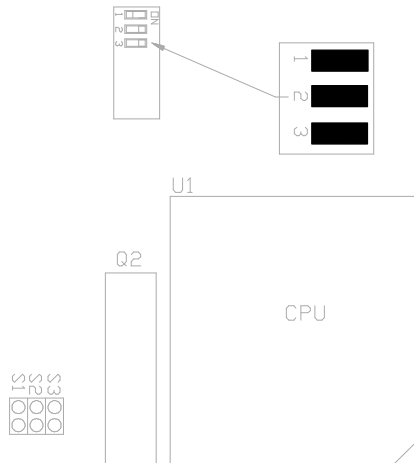
**Fig. 15b CPU Type - 3.5V**

3. 3.3V (I/O)/2.8V (core) Dual Voltage CPU: P55C, Cyrix 6x86L



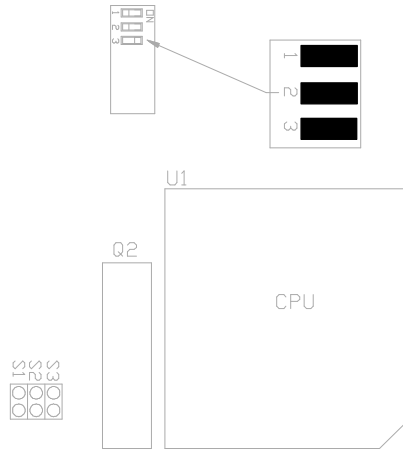
**Fig. 15c CPU Type - 3.3V/2.8V**

4. 3.3V (I/O)/2.9V (core) Dual Voltage CPU: AMD-K6-PR166/PR200



**Fig. 15d CPU Type - 3.3V/2.9V**

5. 3.3V (I/O)/3.2V (core) Dual Voltage CPU: AMD-K6-PR233



**Fig. 15e CPU Type - 3.3V/3.2V**

### 3.5.2 CPU SPEED

1. For 75MHz Intel Pentium, AMD-K5-PR75 CPU



Fig. 16a CPU Speed

2. For 90MHz Intel Pentium, AMD-K5-PR90 and AMD-K5-PR120 CPU

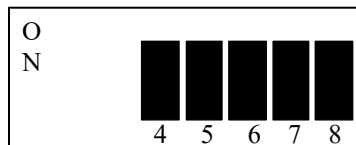


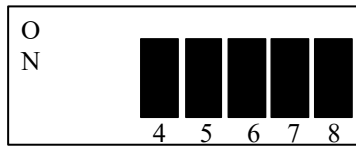
Fig. 16b CPU Speed

3. For 100MHz and 233MHz Intel Pentium; AMD-K6-PR233, AMD-K5-PR100 and AMD-K5-PR150 CPU



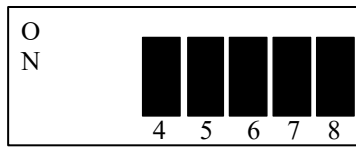
Fig. 16c CPU Speed

4. For 100MHz Cyrix 6x86-P120+ CPU



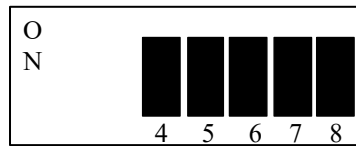
**Fig. 16d CPU Speed**

5. For 110MHz Cyrix 6x86-P133+ CPU



**Fig. 16e CPU Speed**

6. For 120MHz Intel Pentium and Cyrix 6x86-P150+ CPU



**Fig. 16f CPU Speed**

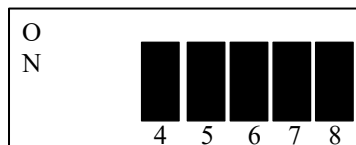


7. For 133MHz Intel Pentium, AMD-K5-PR133 (REV C) and Cyrix 6x86-P166+ CPU



**Fig. 16g CPU Speed**

8. For 150MHz Intel Pentium CPU



**Fig. 16h CPU Speed**

9. For 150MHz Cyrix 6x86-P200+ CPU (for future support only)



**Fig. 16i CPU Speed**

40mper Settings and Connectors

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10. For 166MHz Intel Pentium, AMD-K6-PR166 and AMD-K5-PR166 CPU



**Fig. 16j CPU Speed**

11. For 200MHz Intel Pentium and AMD-K6-PR200 CPU



**Fig. 16k CPU Speed**

### 3.5.3 S4, S5 - DRAM VOLTAGE SELECTION

1. 5V SIMM is selected

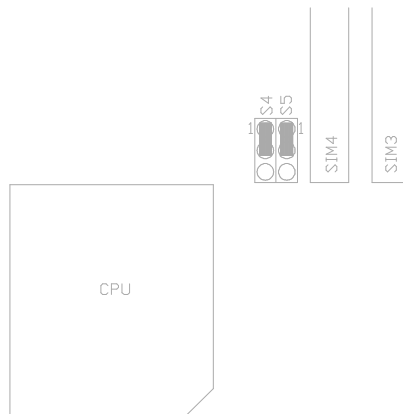


Fig. 17a

2. 3.3V SIMM is selected

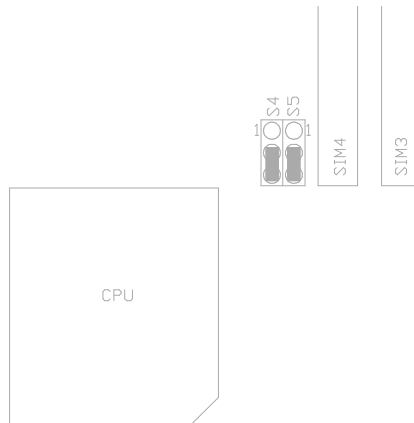
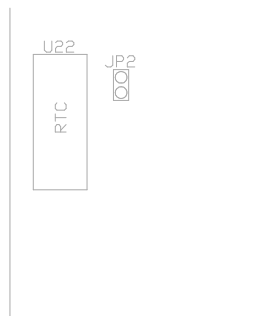


Fig. 17b

### 3.5.4 JP2 - DISCHARGE CMOS RAM

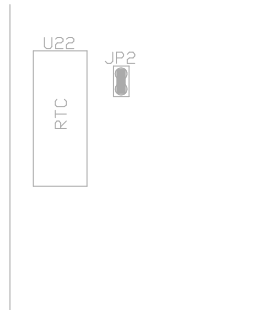
JP2 is used to clear the content of the CMOS Data in the Real Time Clock Chip.

1. Normal Mode



**Fig. 18a**

2. Reset Content of RTC



**Fig. 18b**

Procedures to clear the content on the RTC:

For VT82885N installed on U22: Power off → Clear CMOS → Power On

For DS12887A installed on U22: Power Off → Clear CMOS → Power On

For DS12B887 installed on U22: Power On → Clear CMOS → H/W Reset

For M48T86 installed on U22: Power On → Clear CMOS → H/W Reset

### 3.5.5 JP4 - VOLTAGE SELECT FOR SYSTEM ROM

1. 5V Flash EPROM as system ROM

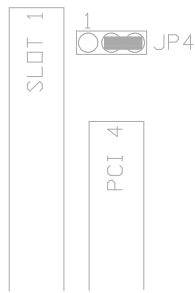


Fig. 19a

2. 12V Flash EPROM as system ROM

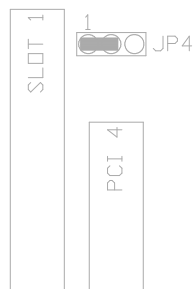


Fig. 19b

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## CHAPTER 4      AWARD BIOS SETUP GUIDE

This following manual is specially provided for the BIOS supported system. After the configuration of the mainboard, and have assembled the components, user can turn on the completed system. At this point, run the software setup to ensure that the system information is correct.

The software setup of the system board is achieved through Basic Input-Output System (BIOS) programming. Use the BIOS setup program to tell the operating system what type of devices (such as disk drives) are connected to the system board.

The system setup is also called CMOS setup. Normally, users need to run system setup if either the hardware configuration is not identical with information contained in the CMOS RAM, or the CMOS RAM has lost power.

### 4.1 AWARD BIOS SETUP

The setup program provided with mainboard is the Award BIOS from Award Software, Inc. Enter the AWARD Setup program's Main Menu as follows:

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

**“Press DEL to enter SETUP”**

2. Press the <DEL> key to enter the AWARD BIOS setup program and the following screen appears:

ROM PCI/ISA BIOS (2A59GG39)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

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	HDD LOW LEVEL FORMAT
LOAD SETUP DEFAULTS	SAVE & EXIT SETUP
	EXIT WITHOUT SAVING
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
Time, Data, Hard Disk Type...	

3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (see the following sections for more information).
4. Press <ESC> at anytime to return to the Main Menu.

- In the Main Menu, choose "SAVE AND EXIT SETUP" to save change and reboot the system. Choosing "EXIT WITHOUT SAVING" to ignore all changes and exits the program.

## 4.2 STANDARD CMOS SETUP

ROM PCI/ISA BIOS (2A59GG39)  
 STANDARD CMOS SETUP  
 AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Thu, Jan 31 1991											
Time (hh:mm:ss) : 15 : 23 : 15											
HARD DISKS	TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE										
Primary Master : Auto	0 0 0 0 0 0 0 AUTO										
Primary Slave : None	0 0 0 0 0 0 0 -----										
Secondary Master : None	0 0 0 0 0 0 0 -----										
Secondary Slave : None	0 0 0 0 0 0 0 -----										
Drive A : 1.44M , 3.5in.	<table border="1"> <tr> <td>Base Memory:</td> <td>640K</td> </tr> <tr> <td>Extended Memory:</td> <td>7168K</td> </tr> <tr> <td>Other Memory:</td> <td>384K</td> </tr> <tr> <td colspan="2"><hr/></td> </tr> <tr> <td>Total Memory:</td> <td>8192K</td> </tr> </table>	Base Memory:	640K	Extended Memory:	7168K	Other Memory:	384K	<hr/>		Total Memory:	8192K
Base Memory:		640K									
Extended Memory:	7168K										
Other Memory:	384K										
<hr/>											
Total Memory:	8192K										
Drive B : None											
Video : EGA/VGA											
Halt On : All Errors											
Esc : Quit	↑ ↓ → ← : Select Item										
F1 : Help	(Shift)F2 : Change Color										
	PU/PD/+/- : Modify										

**Date(mm/dd/yy)**      Type the current date.

**Time(hh:mm:ss)**      Type the current time.



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<b>Hard Disks</b>	Choose from the standard hard disk types 1 to 45. Type 47 is user definable. Type Auto is for auto detect the hard disk type.
<b>Drive A&amp;B</b>	Choose 360K, 5.25 in. 1.2M, 5.25 in. 720K, 3.5 in. 1.44M, 3.5 in. 2.88MB 3.5 in. or None
<b>Video</b>	Choose EGA/VGA, CGA 40, CGA 80, or MONO,
<b>Halt On</b>	Choose All Errors No Errors, All, But Keyboard, All, But Diskette, or All, But Disk/Key

### 4.3 BIOS FEATURES SETUP

ROM PCI/ISA BIOS (2A59GG39)  
 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 Floppy Seek	: Enabled	DC000-DFFFF Shadow	: Disabled
Boot Up Numlock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled		
Assign IRQ for VGA	: Disabled		
OS Select For DRAM > 64MB:	ESC: Quit		
Non-OS2	↑ ↓ → ←:		
	Select Item		
	F1: Help		
	PU/PD/+/-:		
	Modify		
	F5: Old		
	Values		
	(Shift)F2:		
	Color		
	F7: Load		
	Setup		
	Defaults		

**A short description of the screen items follows:**

**Virus Warning:** Enable Virus from invading the Boot area in either Hard Disk or Floppy Drive.

**CPU Internal Cache:** Choose Enabled or Disabled. This option lets user choose whether to use CPU internal cache memory. The default is Enabled.



**External Cache:** Choose Enabled or Disabled. This option lets user choose whether to use secondary cache memory. The default is Enabled.

**Quick Power On Self Test:** Choose Enabled or Disabled. This option let the POST sequence runs longer for through tests.

**Boot Sequence:** With the default setting the BIOS first attempts to boot from drive A: and then, if unsuccessful, from hard disk C:. User can reverse this sequence with "C: A:", but then drive A: cannot boot directly.

**Swap Floppy Drive:** Choose Enabled or Disabled. This option lets end users to change the Drive A: or B: to others.

**Boot Up Floppy Seek:** Choose Enabled or Disabled. "Disabled" provides a fast boot and reduces the possibility of damage to the heads.

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

**Boot Up System Speed:** Choose High or Low. Set the CPU timing at Boot Up, the default is high.

**Gate A20 Option:** Choose Fast or Slow. The system switch back an forth from real mode to virtue mode, fast means the system will switch through logic, slow through keyboard. The default is Fast.

**Typematic Rate Setting:** Choose Enabled or Disabled. Enabled will determines the typematic rate defined by following two options.

**Typematic Rate:** The number selected 6,8,10... indicates how fast the number of characters can response in one second.

**Typematic Delay (Msec):** The number selected indicates the time period between two identical keys appear.

**Security Option:** Choose Setup or System. If system is selected, the password should be set.

**PCI/VGA Palette Snoop:** Select Disabled or Enabled. If Enabled the MPEG Card can synchronised with PCI/VGA.

**OS Select For DRAM > 64MB:** Select Disabled or Enabled. If the system memory is larger than 64MB and running OS/2, please enable this item. However, if it use other operating system, please disable this feature. furthermore, if the system memory is less than 64MB, the BIOS will ignore this function.

**Video BIOS Shadow:** ROM Shadow copies Video BIOS code from slower ROM to faster RAM. Video BIOS can then execute from RAM.

**C8000-CFFFF Shadow:** If enabled and BIOS is present in this segment, then the BIOS is shadowed.

**D0000-DFFFF Shadow:** If enabled and BIOS is present in this segment, then the BIOS is shadowed.



**DRAM Timing:** Choose 60ns or 70ns according to the DRAM SIMM Module on the motherboard.

**DRAM Read Burst (EDO/FP):** This sets the timing for burst mode reads from DRAM:

x444/x444	Read EDO and FP DRAM Timings are x-4-4-4.
x333/x444	Read EDO DRAM Timings are x-3-3-3, and FP DRAM's are x-4-4-4.
x222/x333	Read EDO DRAM Timings are x-2-2-2, and FP DRAM's are x-3-3-3.
x322/x333	Read EDO DRAM Timings are x-3-2-2, and FP DRAM's are x-3-3-3.

**DRAM Write Burst Timing:** This sets the timings for burst write to DRAM:

x444	Write DRAM timings are x-4-4-4.
x333	Write DRAM timings are x-3-3-3.
x222	Write DRAM timings are x-2-2-2.

**ISA Bus Clock:** It is used to select the bus clock for the ISA bus. The available options are "PCICLK/4" and "PCICLK/3", the suggested setting are:

CPU Clock	ISA Bus Clock
50/55MHz	PCICLK/4
60/66MHz	PCICLK/3

**SDRAM (CAS Lat/RAS-to-CAS):** It is used to set the CAS# latency and the RAS to CAS delay for all SDRAM cycles.

SDRAM (CAS Lat/RAS-to-CAS)	CAS# latency	RAS to CAS delay
3/3	3 Clock	3 Clock
2/2	2 Clock	2 Clock
3/2	3 Clock	2 Clock

**System BIOS Cacheable:** Choose Enabled or Disabled. “Enabled” allows system BIOS be cacheable.

**Video BIOS Cacheable:** Choose Enabled or Disabled. “Enabled” allows Video BIOS to be cacheable.

**Memory Hole At 15M-16M:** In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16MB. Disabled is the default.

**Peer Concurrency:** Choose Enabled or Disabled. To enable this option will let the system active more than one PCI Device at a time.



## 4.5 POWER MANAGEMENT SETUP MENU

The Power Management Setup option is used to change the values of the chipset registers for system power management functions.

ROM PCI/ISA BIOS (2A59GG39)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

Power Management	: User Define	<b>** Power Down &amp; Resume Events **</b>	
PM Control by APM	: Yes	IRQ3 (COM2)	: ON
Video Off Method	: V/H SYNC+Blank	IRQ4 (COM1)	: ON
MODEM Use IRQ	: 3	IRQ5 (LPT 2)	: ON
Suspend Mode	: Disabled	IRQ6 (Floppy Disk)	: ON
HDD Power Down	: Disabled	IRQ7 (LPT 1)	: ON
		IRQ8 (RTC Alarm)	: OFF
		IRQ9 (IRQ2 Redir)	: ON
		IRQ10 (Reserved)	: ON
		IRQ11 (Reserved)	: ON
		IRQ12 (PS/2 Mouse)	: ON
		IRQ13 (Coprocessor)	: ON
		IRQ14 (Hard Disk)	: ON
		IRQ15 (Reserved)	: ON
	ESC: Quit		
	↑ ↓ → ←: Select Item		
	F1: Help PU/		
	PD/+/: Modify		
	F5: Old Values		
	(Shift)F2: Color		
	F7: Load Setup		
	Defaults		

*Note: Change these Settings only if user is familiar with the Chipset and system power management functions.*

**A short description of the screen items follows:**

**Power Management:** Available selection are “Disabled”, “User Define”, “Max Saving” and “Min Saving”:

“Disabled” will disable all the power saving functions.

“User Define” makes the time period waiting for Suspend Mode to be programmed.

“Max Saving” will set the time period waiting for Suspend Mode to be 20 seconds.

“Min Saving” will set the time period waiting for Suspend Mode to be 40 minutes.

**PM Control by APM:** Choose options are “Yes” or “No”. To choose “Yes” to let the Power Management Function to be control by the MS APM software.

**Video Off Method:** Choose V/H SYNC+Blank, DPMS or Blank Screen. This is monitor Power Saving Method. V/H SYNC+Blank means turn off Vertical, Horizontal scanning and blank the screen. Blank Screen will blank the display screen. DPMS (Display Power Management System) can allow the System BIOS control the Display Card to turn off the Display.

**MODEM Use IRQ:** Available options are 3, 4, 5, 7, 9, 10, 11 and NA. It is used to choose the interrupt line that the Modem is used. “NA” means not available.

**Suspend Mode:** To set the time period waiting for Suspend Mode when the Power Management function is set to “User Define”.

**HDD Power Down:** To select the time period will turn the HDD off. Accessing the HDD again will take a few seconds for HDD to spin up for operation.

**IRQ3 - IRQ15:** When it is enabled, the system will monitor the activity of the corresponded system IRQ to turn on or off the power management functions.

## 4.6 PCI CONFIGURATION

The PCI Configuration Setup option is used to configure the PCI add-on Cards on PCI Slots. Without proper setup the PCI Add-on Cards might not function properly.

ROM PCI/ISA BIOS (2A59GG39)  
PCI CONFIGURATION  
AWARD SOFTWARE, INC.

Resources Controlled By	: Manual	PCI IRQ Activated By	: Level
Reset Configuration Data	: Disabled	PCI IDE IRQ Map To	: PCI-AUTO
IRQ-3 assigned to	: Legacy ISA	Primary IDE INT#	: A
IRQ-4 assigned to	: Legacy ISA	Secondary IDE INT#	: B
IRQ-5 assigned to	: PCI/ISA PnP	Used Mem Base Addr.	: N/A
IRQ-7 assigned to	: Legacy ISA		
IRQ-9 assigned to	: PCI/ISA PnP		
IRQ-10 assigned to	: PCI/ISA PnP		
IRQ-11 assigned to	: PCI/ISA PnP		
IRQ-12 assigned to	: PCI/ISA PnP		
IRQ-14 assigned to	: Legacy ISA		
IRQ-15 assigned to	: Legacy ISA		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to			
DMA-3 assigned to	ESC: Quit		
DMA-5 assigned to	↑↓→←: Select		
DMA-6 assigned to	Item		
DMA-7 assigned to	F1: Help		
: PCI/ISA PnP	PU/PD/+/-:		
: PCI/ISA PnP	Modify		
: PCI/ISA PnP	F5: Old Values		
: PCI/ISA PnP	(Shift)F2: Color		
: PCI/ISA PnP	F7: Load Setup		
	Defaults		

*Note: Change these Settings only if user is familiar with the Chipset and all the PCI Add-on Cards functions.*

**A short description of the screen items follows:**

**Resources Controlled By:** Available options are “Manual” and “Auto”. If “Auto” is selected, the system BIOS will use the ESCD with the legacy information. If “Manual” is selected, the BIOS will not refer the ESCD for IRQ and DMA information. Instead, it will refer the items in the items in this setup menu for assigning IRQ and DMA.

**Reset Configuration Data:** If enable this option, the BIOS will clear and reset the ESCD after hardware reset.

**IRQ#/DMA# assigned to:** These items will be shown only when “Resources Controlled By” option is set the “Manual”. The available options are “Legacy ISA” and “PCI/ISA PnP”. If the option is set to “Legacy ISA”, the BIOS will never assign the specified IRQ/DMA resource to PCI or ISA PnP Devices. If “PCI/ISA PnP” is chosen, the BIOS will make the specified IRQ/DMA have a chance to be assigned to the PCI or ISA PnP devices.

**PCI IRQ Active By:** Choose Level or Edge. The default settings is Level.

**PCI IDE IRQ Map To:** Choose PCI-AUTO, PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, ISA. The default setting is PCI-AUTO.

**Used Mem Base Addr/Used Mem Length:** These items will be shown only when “Resources Controlled By” option is set to “Manual”. They are used to reserve the memory space for the memory installed on the ISA card in the specified memory segment (such as some network card). The available options for “Used Mem Base Addr” are “N/A”, “C800”, “CC00”, “D000”, “D400”, D800” and “DC00”, which is used to select the base memory address of the ISA card used. With the “Used Mem Base Addr” is selected, the size of the memory installed on ISA card is chosen by “Used Mem Length”: “8K”, “16K”, “32K” or “64K”.

## 4.7 INTEGRATED PERIPHERALS SETUP MENU

The Integrated Peripherals setup option is need to change the values of the I/O chipset register for I/O functions.

ROM PCI/ISA BIOS (2A59GG39)  
INTEGRATED PERIPHERALS  
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	
IDE 32-bit Transfer Mode	: Disabled	
IDE Primary Master PIO	: Auto	
IDE Primary Slave PIO	: Auto	
IDE Secondary Master PIO	: Auto	
IDE Secondary Slave PIO	: Auto	
On-Chip Primary PCI IDE	: Enabled	
On-Chip Secondary PCI IDE	: Enabled	
PCI Slot IDE 2nd Channel	: Enabled	
USB Controller	: Disabled	
Onboard FDD Controller	: Enabled	
Onboard Serial Port 1	: Auto	
Onboard Serial Port 2	: Auto	
UART 2 Mode	: Standard	
Onboard Parallel Port	ESC: Quit	
Onboard Parallel Mode	↑↓→←:	
ECP Mode Use DMA	Select Item	
: 378/IRQ7	F1: Help	
: ECP	PU/PD/+/-:	
: 3	Modify	
	F5: Old	
	Values	
	(Shift)F2:	
	Color	
	F7: Load	
	Setup Defaults	

**A short description of the screen items follows:**

**IDE HDD Block Mode:** This allows your hard controller to use the fast block mode to transfer data to your hard disk drive.

---

**IDE 32-bit Transfer Mode:** Enabling 32-bit transfer mode allows faster access to data on the hard disk drive.

**IDE Primary Master PIO/IDE Primary Slave PIO/IDE Secondary Master PIO/IDE Secondary Slave PIO/IDE:** Available selection are “Auto”, “Mode 0”, “Mode 1”, “Mode 2”, “Mode 3” and “Mode 4”. To choose “Auto”, the system BIOS will scan the IDE device and decide which mode of the device is. Otherwise the user should key in the mode of the device to the corresponding field.

*Some harddisks cannot work properly with its corresponding timing, please set a slower timing.*

**On-Chip Primary PCI IDE:** This item is used to enable or disable the on board primary IDE controller. User can disable it if higher performance or specialized controller is added to the system.

**On-Chip Secondary PCI IDE:** This item is used to enable or disable the on board secondary IDE controller. User can disable it if higher performance or specialized controller is added to the system.

**PCI Slot IDE 2nd Channel:** This item the user design at an IDE controller board inserted on the PCI Slots as your secondary IDE controller.

**USB Controller:** Choose Enabled or Disabled. “Enabled” allows the on board Universal Serial Bus (USB) Controller to be functioned.

**Onboard FDC Controller:** Choose Enabled or Disabled. “Enabled” allows onboard Floppy Drive Controller to be functioned, otherwise the users should use other sources.

**Onboard Serial Port 1:** Choose None or from COM1, COM3, COM4 with different I/O Address. While choosing proper I/O Address, be sure not to cause Address conflict with other I/O devices.

**Onboard Serial Port 2:** Choose None or from COM1, COM2, COM3, COM4 with different I/O Address. While choosing proper I/O Address, be sure not to cause Address conflict with other I/O devices.

**UART 2 Mode:** Choose Standard, ASKIR and HPSIR for IrDA serial interface.

**IR Function Duplex:** This item will be shown only when **UART 2 Mode** is selected to ASKIR or HPSIR. The available options are “Full” and “Half”. It is used to choose the IR function working in full duplex mode or half duplex mode correspondingly.

**RxD, TxD Active:** This item will be shown only when **UART 2 Mode** is selected to ASKIR or HPSIR. The available options are “Hi, Hi”, “Hi, Lo”, “Lo, Hi” and “Lo, Lo”. It is used to configure the logic level of Receive and Transmit signal in IrDA interface.

**Onboard Parallel Port:** Choose None or with four different I/O Address and corresponding IRQx. While choosing proper I/O Address, be sure not to cause Address conflict with other I/O devices.

**Onboard Parallel Mode:** Choose SPP, EPP/SPP, ECP, ECP/EPP Mode. Make proper selection with the attached printer port device.

**ECP Mode Use DMA:** Choose “1” or “3” to select the DMA channel used for the ECP device. This item is shown if the **Onboard Parallel Mode** is chosen as “ECP” or “ECP/EPP” option.

**Parallel Port EPP Type:** Choose “EPP1.7” or “EPP1.9”, which is used to configure the EPP using either EPP1.7 or 1.9 timing specification. This item is shown if the **Parallel Mode** is chosen as “EPP” or “ECP/EPP” option.

## 4.8 LOAD SETUP DEFAULTS MENU

This Main Menu item uses the default setup values. Use this option as a diagnostic aid if the system behaves erratically. Choose this item and the following message appears:

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

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

## 4.9 SUPERVISOR PASSWORD

Two level of password is supported. Depending on the setting of the "Security Option" in the "BIOS FEATURES SETUP", the system BIOS will ask for password every time booting up the System or entering BIOS Setup. With the supervisor password, both the system booting and BIOS setup changing is allowed.



This main menu item lets the user to set up the Supervisor Password.

Change the password as follows:

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

**"ENTER PASSWORD:"**

2. Enter the Password and press <Enter>. The following message appears:

**"CONFIRM PASSWORD:"**

*Important: Keep a safe record of the new password. If forget or lose the password, the only way to access the system is to disconnect the CMOS batteries and then re-enter the password.*

## **4.10 USER PASSWORD**

With the user password, only booting up the system is accepted, but changing the BIOS setup is not allowed.

## 4.11 IDE HDD AUTO DETECTION

When users can not find the Hard Disk information, it is very helpful to use this option.

1. Choose this item and press <Enter>.
2. After couple seconds, the screen will appear the Hard Disk information and following message:

**"SELECT PRIMARY MASTER OPTION(N=SKIP): N"**

3. Enter Y or N to confirm the acceptance then enter.
4. The process will repeat for Primary Slave, Secondary Master and Secondary Slave Hard Disks.

## 4.12 SCSI HARD DISK INSTALLATION

In Standard CMOS Setup Utility, select hard disk type to "Not Installed".  
In Advanced CMOS Setup Utility, Disable "Adapter ROM Shadow DC00".  
On the SCSI Controller card, set the jumpers which configure the SCSI card BIOS segment address located at DC00 or DE00. Format the SCSI disk by the Formatter provided in the SCSI BIOS.

## 4.13 SAVE & EXIT SETUP MENU

When you select this function, the following message will appear at the centre of the screen to assist you to Save data to CMOS and Exit the Setup.

**Save to CMOS and Exit (Y/N)?**

## 4.14 EXIT WITHOUT SAVING MENU

When you select this function, the following message will appear at the centre of the screen to assist you to Abandon all Data and Exit Setup.

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













