

PAM-0057I

High Performance
Pentium PCI Mainboard
User's Guide



Edition 5.10

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CHAPTER 1

INTRODUCTION

Preface

The motherboard is a 4-layer, 2/3 baby AT size high performance mainboard. It includes Intel 82430TX system chipset, NS PC87309 Super I/O controller.

Features

Processor

- Intel Pentium/MMX, Cyrix 6x86/6x86L/6x86MX and AMD K5/K6 CPU.
- The mainboard can run with following speeds:
90, 100, 110, 120, 133, 150, 166, 200, 233 and 266 MHz

Chipset

- Intel 82439TX (Intel 82430TX System Controller)
- Intel 82371AB (PCI ISA IDE Xcelerator)
- NS PC87309 (Super I/O Controller)

Cache Size

- Built in 0/512KB Synchronised Pipelined Burst Mode SRAM to achieve the high Pentium system performance.

Main Memory

- Support Mixed Memory Technologies: Extend Data Output (EDO), Standard Page Mode (SPM), Fast Page Mode (FPM) and Synchronous DRAM (SDRAM) SIMM can work together.
- Memory configurations from 4MB to 256MB are possible using combination of 512K*32 to 8M*32 SIMM module (32 bit no-parity 72-pin SIMM module) and 2M*32 to 8M*32 SDRAM DIMM module.
- 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 and keyboard supported.
- IrDA supported.
- Dual standard USB (Universal Serial Bus) ports supported.

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.
- Ultra DMA Mode supported. Transfer rate can be up to 33Mb/s.

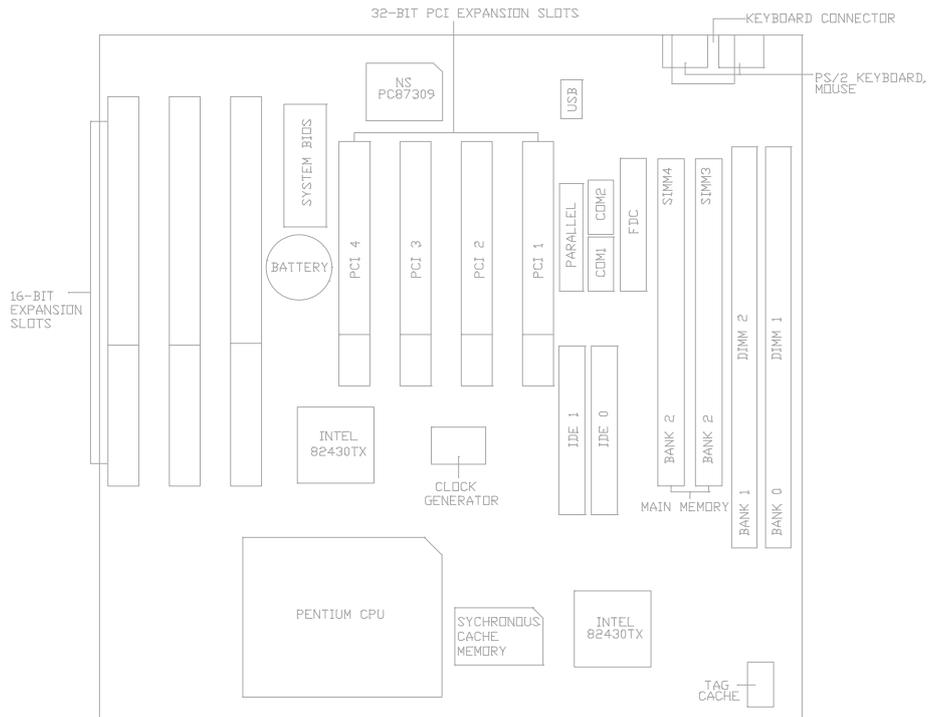


Fig. 1 Key Components of the Mainboard

Chapter 1

System BIOS

- Award BIOS (128KB Flash EPROM).

Slots

- Four PCI slots
- Three ISA slots

Board

- 4 Layer

Form Factor

- 2/3 Baby AT Size (220mm x 240mm)

Environment

Working Specifications

Actual Field MTBF (hours)	104,515 hours
Preventive Maintenance	Not Required

Environmental Limits

	Operating	Non-operating
Temperature	0 to 50 degree Celsius	-10 to 65 Degree Celsius
Relative Humidity (without condensation)	8 to 85%	5 to 95%
Altitude	10,000ft	40,000ft
Vibration	1,000Hz	
Electricity	4.75 ~ 5.25V	

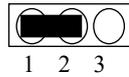
Power Specifications

Configuration: 133MHz Intel P54C CPU, 16MB 60ns EDO SIMM, 256KB Cache, 3.5 inch floppy drive, 840MB Hard Disk, running at DOS prompt.

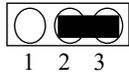
DC Voltage	Tolerance	Consumption (mA)
+5V	+/- 5%	860
+5V Stand by	+/- 5%	0.5
+5V	+/- 5%	0
+12V	+/- 5%	200
-12V	+/- 5%	30

CHAPTER 2 JUMPER SETTINGS

2.1 JUMPERS 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.

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

2.2 CPU TYPE

2.2.1 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)

Z = Dual Processing Support (S or U)

S = Support DP/MP/UP

U = Not tested to support DP

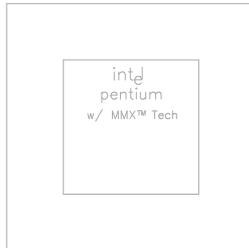
Y = Timing Specification (S or M)

S = Standard EDS timings

M = Min Valid Delay Spec.

2.2.2 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 (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)**

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

2.2.3 AMD-K6 CPU

The AMD-K6 CPU family require dual voltage power for operation. The AMD-K6/166 and AMD-K6/200 require a voltage of 2.9V for the core and 3.3V for the I/O. The AMD-K6/233 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.)

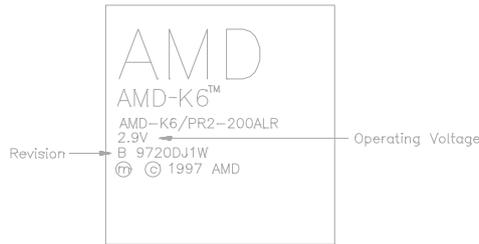


Fig. 2c CPU Description (Top Side)

Operating Voltage	I/O Voltage	Core Voltage
2.2V	3.3V	2.2V
2.9V	3.3V	2.9V
3.2V	3.3V	3.2V

2.2.4 AMD-K5 CPU

The AMD-K5 family CPU operates 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.)

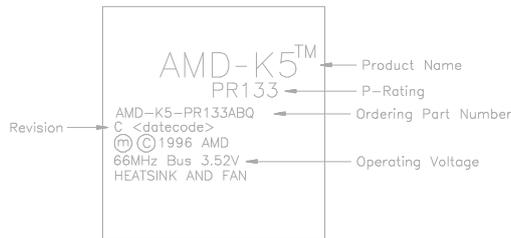
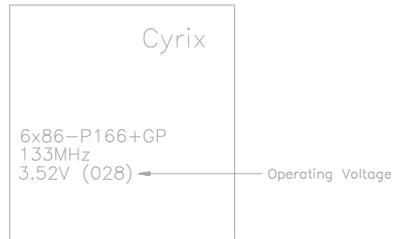


Fig. 2d CPU Description (Top Side)

2.2.5 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)**

Marketing	Recommended Nominal Voltage
3.3V or 3.52V	3.52V
028	3.52V
016	3.3V
Blank	3.52V

2.2.6 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)**

2.2.7 CYRIX 6x86MX CPU

The Cyrix 6x86MX has different I/O and Core Voltage. Please refer to the CPU marking.



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

	I/O Voltage	Core Voltage
Cyrix 6x86MX	3.3V	2.9V
Cyrix 6x86L	3.3V	2.8V

2.2.8 IDT WinCHIP C6 CPU

The IDT WinChip C6 CPU has different operating voltage. Please refer to the CPU marking to identify the operating voltage.



Fig. 2h CPU Description

2.3 GRAPHICAL DESCRIPTION OF JUMPER SETTINGS

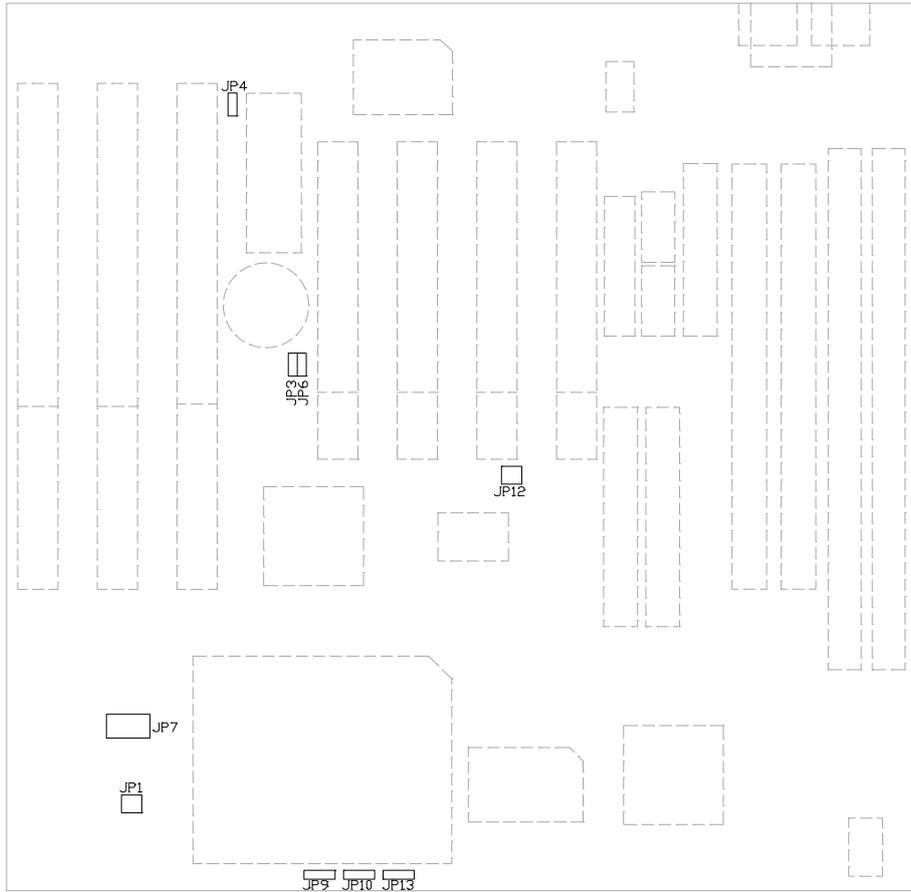


Fig. 3 Connector Location of the mainboard

2.4 CPU VOLTAGE

1. 3.3V Single Voltage CPU: P54C, P54CT and 3.3V IDT WinChip C6

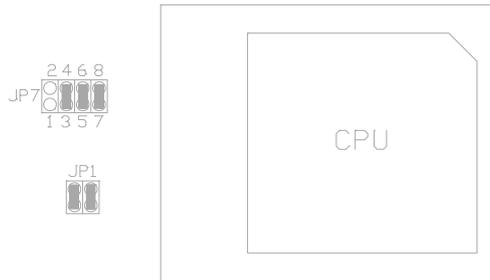


Fig. 4a CPU Type - 3.3V

2. 3.5V Single Voltage CPU: P54C-VRE, AMD-K5, Cyrix 6x86 and 3.5V IDT WinChip C6

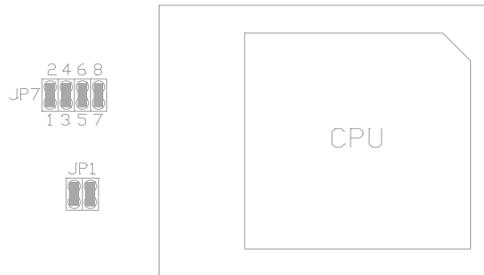


Fig. 4b CPU Type - 3.5V

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

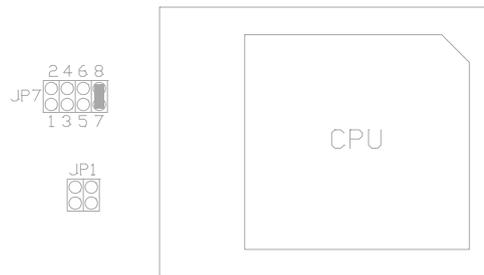


Fig. 4c CPU Type - 3.3V/2.8V

4. 3.3V (I/O)/2.9V (core) Dual Voltage CPU: AMD-K6/166 and 200, Cyrix 6x86MX

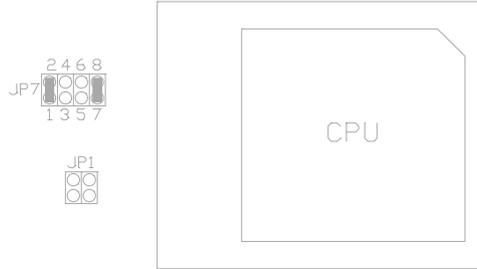


Fig. 4d CPU Type - 3.3V/2.9V

5. 3.3V (I/O)/3.2V (core) Dual Voltage CPU: AMD-K6/233 and 266

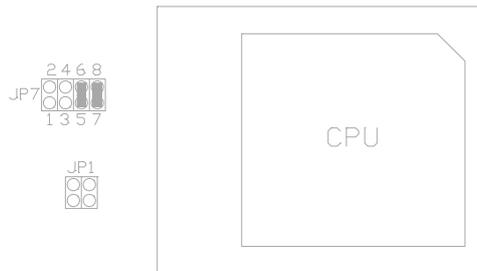


Fig. 4e CPU Type - 3.3V/3.2V

6. 3.3V (I/O)/2.2V (core) Dual Voltage CPU: AMD-K6/233 and 266 (Reserved for future)

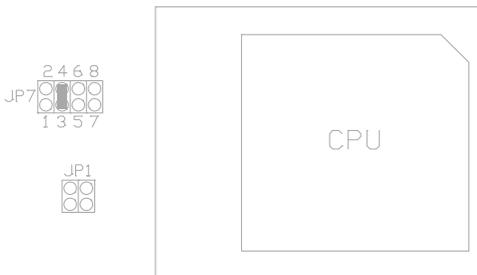


Fig. 4f CPU Type - 3.3V/2.2V

2.5 CPU SPEED

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

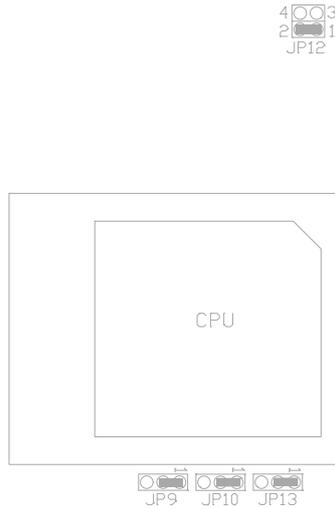


Fig. 5a CPU Speed

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

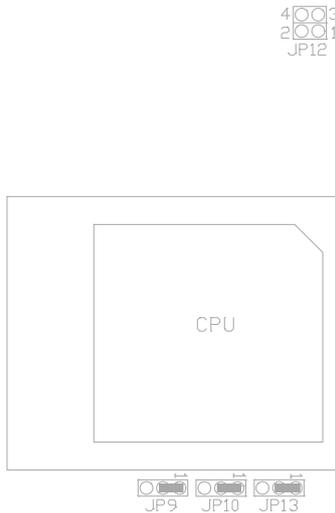


Fig. 5b CPU Speed

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

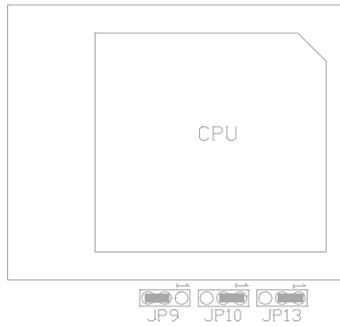


Fig. 5c CPU Speed

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

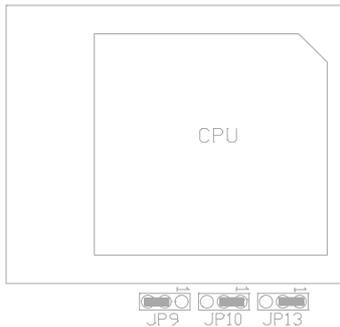


Fig. 5d CPU Speed

Chapter 2

5. For 133MHz Intel Pentium, AMD-K5-PR133 (REV C) and Cyrix 6x86L-PR166+ CPU

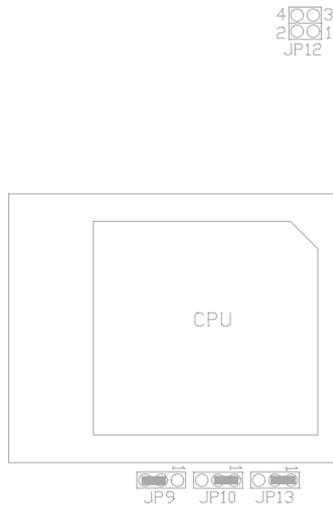


Fig. 5e CPU Speed

6. For 150MHz Intel Pentium and Cyrix 6x86MX-PR166 CPU

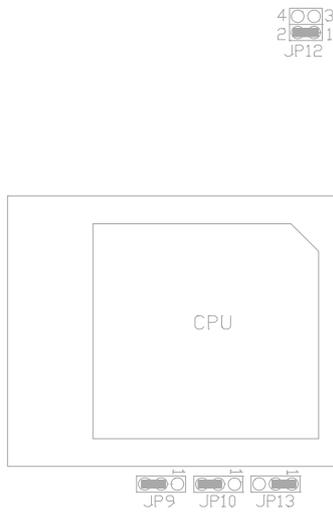


Fig. 5f CPU Speed

7. For 150MHz Cyrix 6x86L/MX-PR200+ CPU (for future support only)

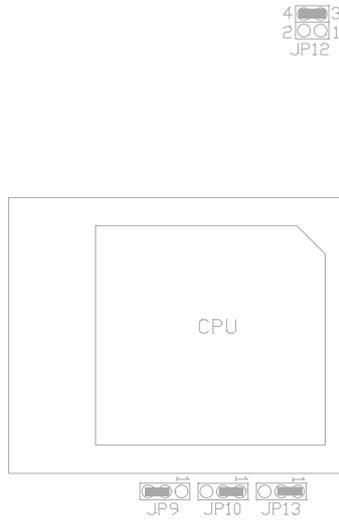


Fig. 5g CPU Speed

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

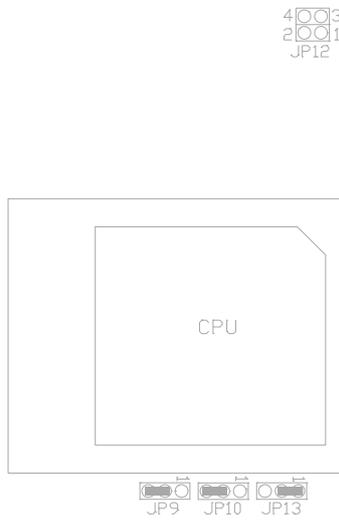


Fig. 5h CPU Speed

Chapter 2

9. For 180MHz IDT WinChip C6-180 CPU (for future support only)

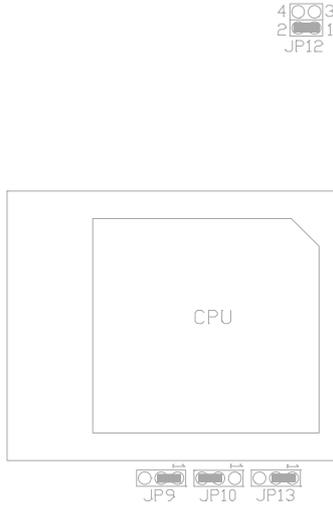


Fig. 5i CPU Speed

10. For 200MHz Intel Pentium, AMD-K6/200 and IDT WinChip C6-200(for future support only) CPU

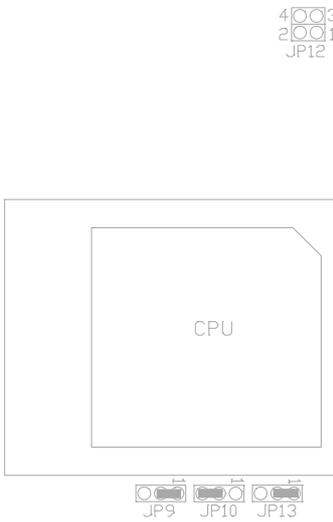


Fig. 5j CPU Speed

11. For 233MHz Cyrix 6x86MX-PR233 CPU (Reserved)

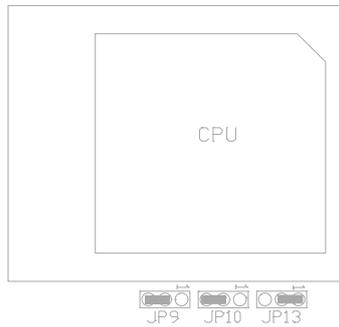


Fig. 5k CPU Speed

12. For 266MHz AMD-K6/266 CPU (Reserved)

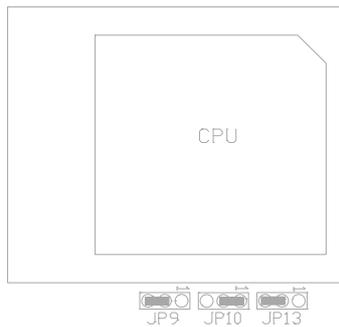


Fig. 5l CPU Speed

2.6 JP3, JP6 - CLEAR CMOS DATA

1. Normal Mode

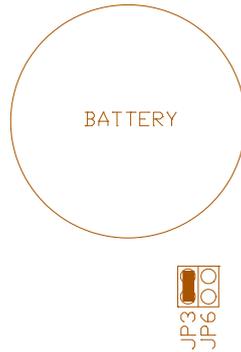


Fig. 6a

2. Reset Content of RTC

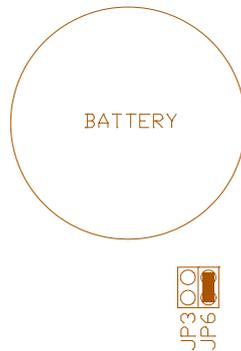


Fig. 6b

2.7 JP4 - VOLTAGE SELECTION FOR SYSTEM ROM

1. 5V Flash EPROM on System ROM

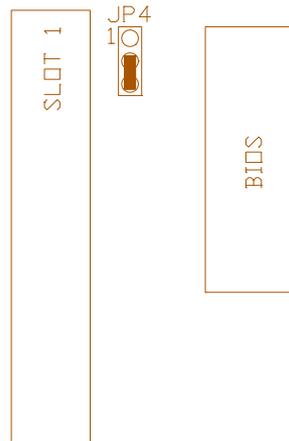


Fig. 7a

2. 12V Flash EPROM on System ROM

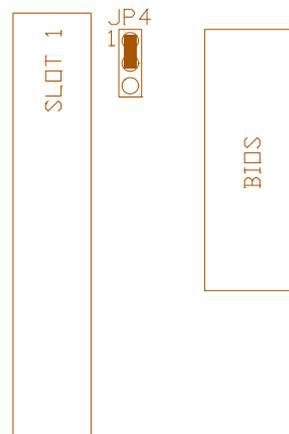


Fig. 7b

2.8 MEMORY CONFIGURATION

The mainboard lets user upgrade system memory via SIMM and DIMM sockets on the mainboard.

Two SIMM sockets (SIMM3, SIMM4) are provided for SPM, FPM and EDO RAM SIMM and two DIMM sockets (DIMM1, DIMM2) are available for the SDRAM or 3.3V EDO DIMM.

Note: The type of SIMM3/SIMM4 must be same.

Table 1 provides some typical memory configuration supported by the mainboard.

Onboard memory is located in three banks:

Bank 0: DIMM1

Bank 1: DIMM2

Bank 2: SIMM3 & SIMM4

The total memory size is 8-256MB and various configuration of DRAM types in the following table are for reference:

Bank 0 (DIMM1)	Bank 1 (DIMM2)	Bank 2 (SIMM3 & SIMM4)
Single	None	Single
None	Single	Double
Single	Single	None
Single	Double	Single
Double	Single	Double
Double	None	None
None	Double	None
Double	Double	Double
None	None	Double
None	None	Single

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, 64MB and the size of Single side DIMM can be 8MB, 32MB, 128MB.

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, 64MB.

****Note:** *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 time.*

SIMM modules can be installed with DIMM modules which 16Mbits or less SDRAM is used.

2.9 CACHE MEMORY CONFIGURATION

The mainboard has a built-in cache controller. It requires external SRAM as tag and data memory.

Cache Tag RAM Location : U9

Synchronous Pipeline Burst SRAM Location : U5

Cache Size	Tag RAM (U9)	Data RAM (U5)
512K	16Kx8	64Kx64

Table 2: Secondary Cache Configuration

***Note:** *Tag RAM are all 5V device, Pipeline Burst data RAM are 3.3V device e.g. Winbond W25P240AF.*

CHAPTER 3

CONNECTOR CONFIGURATION

Once the mainboard has been fastened into system case, the next step is to connect the internal cables and external cables. The mainboard connectors have varying numbers of pins and are the points of contact between the mainboard and other parts of the computer.

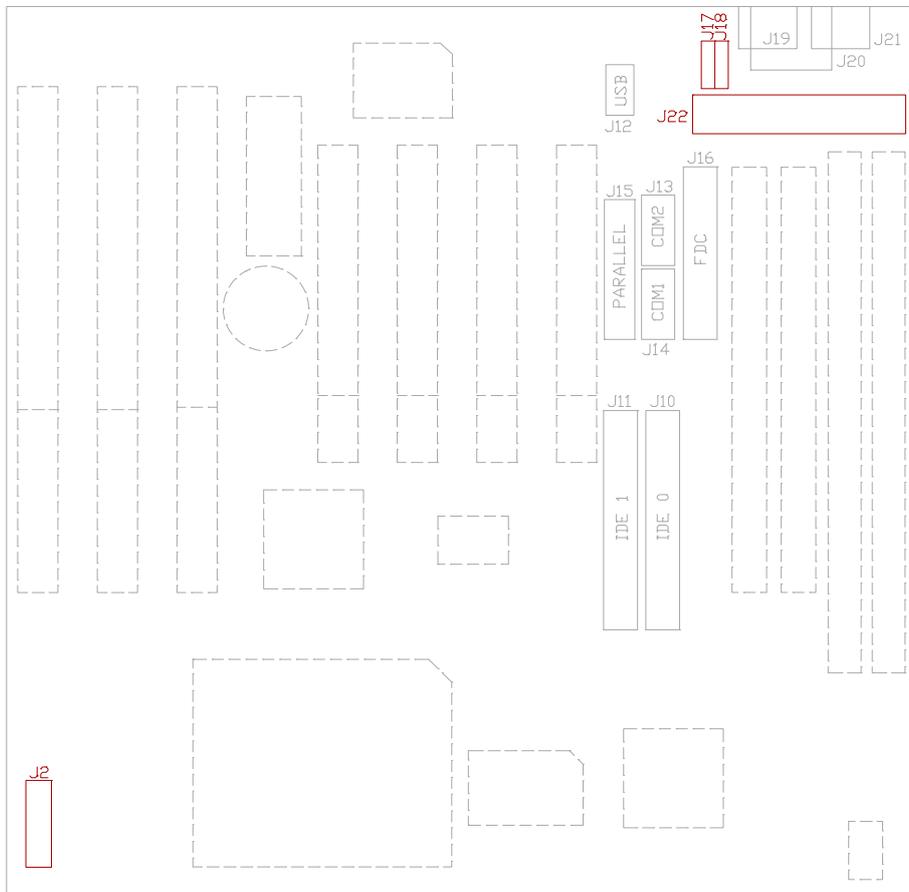


Fig. 8 Connector Location

3.1 J2 - RESET SWITCH, SMI SWITCH, SPEAKER, TURBO LED, POWER LED AND HDD LED CONNECTOR

J2 is a 2x10 pin header for Hard Disk LED, Power LED, Turbo LED, Suspense Switch, Reset Switch and Speaker Connector.

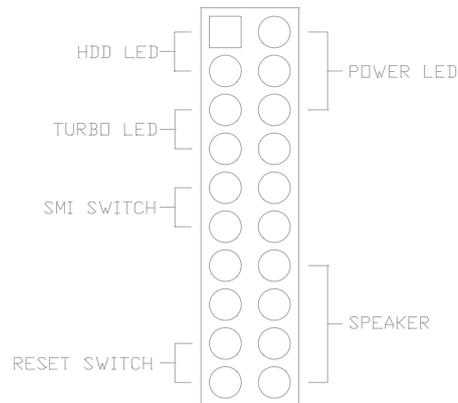


Fig. 9

- **RESET SWITCH CONNECTOR**

Attach the Reset switch cable to this connector. The Reset switch restarts the system. Please refer to Fig. 9.

- **SMI SWITCH**

Trigger this switch will put the system into suspend immediately. Please refer to Fig. 9.

- **SPEAKER CONNECTOR**

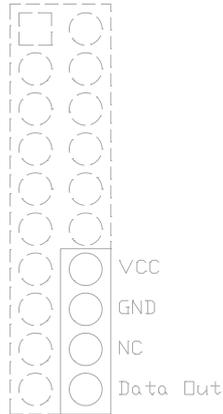


Fig. 10 Speaker Connector

- **TURBO LED CONNECTOR**

Turbo LED on front of the system case. If the system board select is in Turbo mode, the indicator lights during high-speed operation. This motherboard always operate at high-speed.

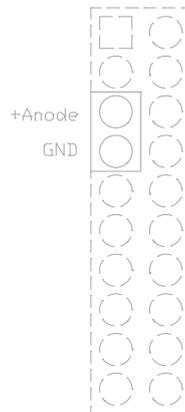


Fig. 11 Turbo LED

- **POWER LED CONNECTOR**

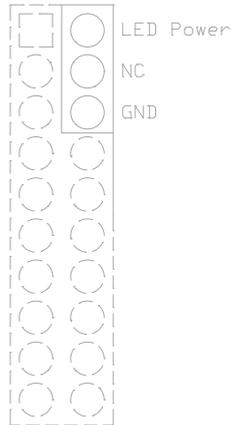


Fig. 12 Power LED Connector

- **HDD LED CONNECTOR**

Connected this jumper to the HDD LED on front of the system case. If the HDD is in operation, the indicator lights during operation.

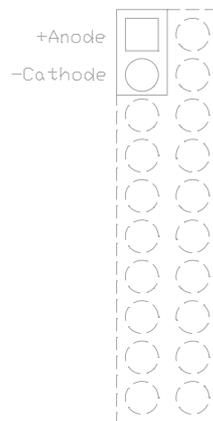


Fig. 13 HDD LED

3.2 J10 - PRIMARY IDE CONNECTOR

It locates at the lower left of SIMM socket with pin 1 on the upper side.

3.3 J11 - SECONDARY IDE CONNECTOR

J11 locates at the left of J10, the primary IDE connector with pin 1 on the upper side.

3.4 J12 - UNIVERSAL SERIAL BUS PORTS 0 & 1

J12 is a 2x5 pin header for USB0 and USB1 connector, and it is also designed as the connector for the optional USB extension card.

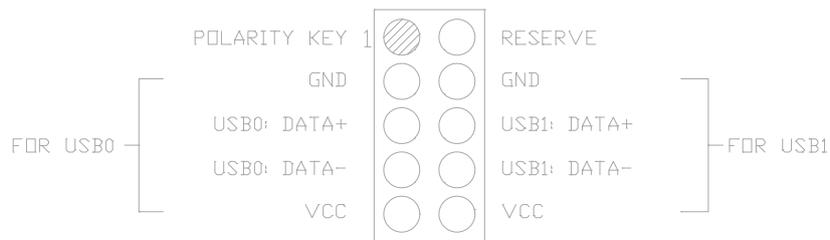


Fig. 14 USB Connector

3.5 J13 - SERIAL PORT 2

J13 locates above J14.

3.6 J14 - SERIAL PORT 1

Both COM1 and 2 are 16550 fast UART compatible. J13 and J14 locate left to J16 Floppy Drive Controller. Pin 1 is on the upper side.

3.7 J15 - PARALLEL PORT

J15 locates at the left of the two serial ports with pin 1 on the upper side.

3.8 J16 - FLOPPY DRIVE CONTROLLER

J16 locates at upper left of SIMM socket. This floppy drive controller also support 2.88M FDD format.

3.9 J17 - PS/2 MOUSE EXTENSION

J17 is up to J22 Power Supply Connector and left to J18. For optional PS/2 mouse extension cable use only.

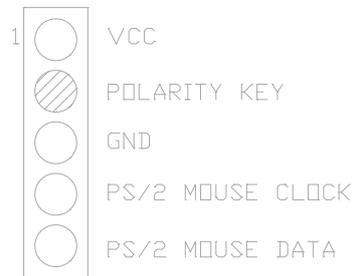


Fig. 15 PS/2 Mouse Extension

3.10 J18 - IrDA CONNECTOR

J18 is up to J22 Power Supply Connector and right to J17.

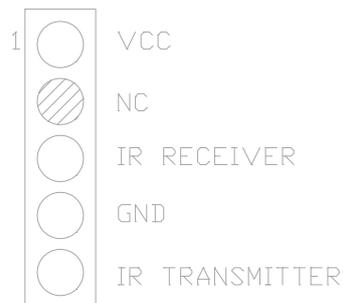


Fig. 16 IrDA Connector

3.11 J19 - PS/2 STYLE MOUSE CONNECTOR (OPTIONAL)

A PS/2 standard six-pin female DIM connector for mouse is located at left of the J20.

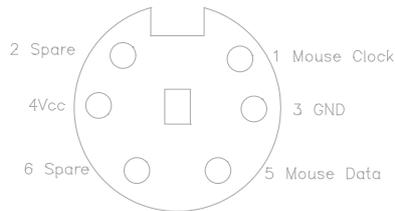


Fig. 17 PS/2 Mouse Connector

3.12 J20 - KEYBOARD CONNECTOR

A standard five-pin female DIM keyboard connector is located at the rear of the keyboard. Plug the jack on the keyboard cable into this connector.

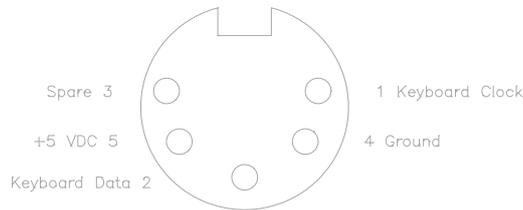


Fig. 18 Keyboard Connector

3.13 J21 - PS/2 STYLE KEYBOARD CONNECTOR (OPTIONAL)

A PS/2 standard six-pin female DIM connector for keyboard is located at right to J20.

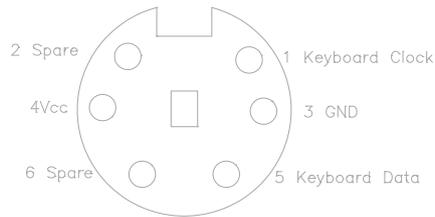


Fig. 19 PS/2 Keyboard Connector

3.14 J22 - 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	Pin	Description
1	Power Good (Orange)	7	Ground (Black)
2	+5 VDC (Red)	8	Ground (Black)
3	+12 VDC (Yellow)	9	-5 VDC (White)
4	-12 VDC (Blue)	10	+5 VDC (Red)
5	Ground (Black)	11	+5 VDC (Red)
6	Ground (Black)	12	+5 VDC (Red)

Table 3: Power Supply Connector

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 the 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 key to enter the AWARD BIOS setup program and the following screen appears:

ROM PCI/ISA BIOS (2A59ID1H)
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	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING

Esc : Quit ↑ ↓ → ← :
F10 : Save & Exit Setup Select Item (Shift)F2 : Change
Color

Time, Data, Hard Disk Type...

Fig. 20

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.
5. 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 exists the program.

4.2 STANDARD CMOS SETUP

ROM PCI/ISA BIOS (2A59ID1H)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Mon, Feb 03 1997																	
Time (hh:mm:ss) : 15 : 23 : 15																	
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR MODE										
Primary Master	: Auto	00	0	0	0	0	AUTO										
Primary Slave	: None	00	0	0	0	0	-----										
Secondary Master	: None	00	0	0	0	0	-----										
Secondary Slave	: None	00	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			PU/PD/+/- : Modify												
F1 : Help		(Shift)F2 : Change Color															

Fig. 21

- Date(mm/dd/yy)** Type the current date.
- Time(hh:mm:ss)** Type the current time.
- Hard Disks** Choose from the standard hard disk types 1 to 45. Type "User" is user definable. Type "Auto" is for auto detect the hard disk type.
- Drive A&B** Choose 360K, 5.25in.; 1.2M, 5.25in.; 720K, 3.5in.; 1.44M, 3.5in.; 2.88MB 3.5in. or None
- Video** Choose EGA/VGA, CGA 40, CGA 80, or MONO,
- Halt On** 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 (2A59ID1H)
 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	: Enabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	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	ESC: Quit	↑ ↓ → ←: Select Item
Assign IRQ For VGA	: Enabled	F1: Help	PU/PD/+/-: Modify
OS Select For DRAM > 64MB	: Non-OS2	F5: Old Values	(Shift)F2: Color
HDD S.M.A.R.T. capability	: Enabled	F6: Load BIOS Defaults	
Report No FDD For WIN 95	: No	F7: Load Setup Defaults	

Fig. 22 BIOS Setup Defaults

A short description of the screen items follows:

Virus Warning: When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program.

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 select other boot up sequence. Available sequences are "A,C,SCSI", "C,A,SCSI", "C,CDROM,A", "CDROM,C,A", "D,A,SCSI", "E,A,SCSI", "F,A,SCSI", "SCSI,A,C", "SCSI,C,A", "C only", "LS/ZIP,C".

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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 (chipset handled) or Normal (keyboard handled). The gate A20 is a device used to address memory above 1Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

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.

Assign IRQ For VGA: Choose Enabled or Disabled. Enabled will assign an IRQ to Graphic Controller.

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.

HDD S.M.A.R.T. capability: Choose Enabled or Disabled. Enabled will support the hard driver S.M.A.R.T. feature (Self-Monitoring, Analysis and Reporting Technology).

Report No FDD For WIN 95: Choose Yes or No. Yes will show a removable disk in Windows 95 when the floppy drive is set as None.

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

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

4.4 CHIPSET FEATURES SETUP

The Advanced Chipset Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Note: Change these Settings only if user is familiar with the Chipset.

ROM PCI/ISA BIOS (2A59ID1H)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	
DRAM Timing	: 70ns	
System BIOS Cacheable	: Disabled	
Video BIOS Cacheable	: Disabled	
8 Bit I/O Recovery Time	: 1	
16 Bit I/O Recovery Time	: 2	
Memory Hole At 15M-16M	: Disabled	
PCI 2.1 Compliance	: Disabled	
		ESC: Quit ↑ ↓ → ←: Select Item
		F1: Help PU/PD/+/-: Modify
		F5: Old Values (Shift)F2: Color
		F6: Load BIOS Defaults
		F7: Load Setup Defaults

Fig. 23

A short description of the screen items follows:

Auto Configuration: Pre-defined values for DRAM, cache, timing according to CPU type & system clock. Choose Enabled or Disabled.

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

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

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

8 Bit I/O Recovery Time: This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks. 1 clock is the default.

16 Bit I/O Recovery Time: This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks. 1 clock is the default.

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.

PCI 2.1 Compliance: Select Enabled to support compliance with PCI specification version 2.1. The chipset has an embedded 32-bit posted write buffer to support delay transactions.

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 (2A59ID1H)	
POWER MANAGEMENT SETUP	
AWARD SOFTWARE, INC.	
Power Management	: Disabled
PM Control by APM	: Yes
Video Off Method	: V/H SYNC+Blank
Video Off After	: Standby
MODEM Use IRQ	: 3
Suspend Mode	: 1 Min
HDD Power Down	: 1 Min
Throttle Duty Cycle	: 62.5%
ZZ Active in Suspend	: Disabled
VGA Active Monitor	: Enabled
IRQ 8 Break Suspend	: Disabled
** Reload Global Timer Events **	
IRQ [3-7,9-15], NMI	: Enabled
Primary IDE 0	: Disabled
Primary IDE 1	: Disabled
Secondary IDE 0	: Disabled
Secondary IDE 1	: Disabled
Floppy Disk	: Disabled
Serial Port	: Enabled
Parallel Port	: Disabled
ESC: Quit	↑ ↓ → ←: Select Item
F1: Help	PU/PD/+/-: Modify
F5: Old Values	(Shift)F2: Color
F7: Load Setup Defaults	

Fig. 24

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 1 minute.

“Min Saving” will set the time period waiting for Suspend Mode to be 1 hour.

PM Control by APM: Available options are “Yes” and “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.

Video Off After: As the system moves from lesser to greater power-saving modes. Select the mode in which you want the monitor to blank. The available options are “Standby”, “Suspend”, “Doze” and “NA”.

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.

Throttle Duty Cycle: When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs. The options are 12.5%, 25%, 37.5%, 50%, 62.5% and 75%.

ZZ Active in Suspend: When Enabled, the ZZ signal is active during Suspend Mode.

VGA Active Monitor: When Enabled, any video activity restarts the global timer for Standby Mode.

IRQ 8 Break Suspend: You can select Enabled or Disabled monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend Mode.

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Reload Global Timer Event: When Enabled, an event occurring on each device listed below restarts the global time for Standby Mode.

- IRQ[3-7,9-15], NMI
- Primary IDE 0
- Primary IDE 1
- Secondary IDE 0
- Secondary IDE 1
- Floppy Disk
- Serial Port
- Parallel Port

4.6 PnP/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 (2A59ID1H)
 PNP/PCI CONFIGURATION
 AWARD SOFTWARE, INC.

PNP OS Installed	: Yes	PCI IDE IRQ Map To	: PCI-AUTO
Resources Controlled By	: Manual	Primary IDE INT#	: A
Reset Configuration Data	: Disabled	Secondary IDE INT#	: B
IRQ-3 assigned to	: Legacy ISA	Used MEM base addr	: N/A
IRQ-4 assigned to	: Legacy ISA		
IRQ-5 assigned to	: PCI/ISA PnP		
IRQ-7 assigned to	: PCI/ISA PnP		
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	: PCI/ISA PnP		
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP	ESC: Quit	↑ ↓ → ←: Select Item
DMA-1 assigned to	: PCI/ISA PnP	F1: Help	PU/PD/+/-: Modify
DMA-3 assigned to	: PCI/ISA PnP	F5: Old Values	(Shift)F2: Color
DMA-5 assigned to	: PCI/ISA PnP	F6: Load BIOS Defaults	
DMA-6 assigned to	: PCI/ISA PnP	F7: Load Setup Defaults	
DMA-7 assigned to	: PCI/ISA PnP		

Fig. 25

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:

PNP OS Installed: Choose "Yes" to configure the BIOS that the Operating System installed support the Plug and Play standard.

Resources Controlled By: The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95.

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

IRQ#/DMA# assigned to: This items allows you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot. Choices are Legacy ISA and PCI/ISA PnP.

PCI IDE IRQ Map To: Choose PCI-AUTO, PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, PCI-SLOT4, ISA. The default setting is PCI-AUTO.

Primary/Secondary IDE INT#: Each PCI peripheral connection is capable of activating up to four interrupts: INT#A, INT#B, INT#C and INT#D. By default, a PCI connection is assigned INT#A. Assign INT#B has no meaning unless the peripheral device requires two interrupt services them just one.

Used MEM Base Addr/Used MEM Length: These items will be shown only when "Resources Controller 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 "User 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 registers for I/O functions.

ROM PCI/ISA BIOS (2A59ID1H)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Onboard Parallel Port	: 378/IRQ7
IDE Primary Master PIO	: Auto	Parallel Port Mode	: ECP
IDE Primary Slave PIO	: Auto	ECP Mode Use DMA	: 3
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Onboard FDC Controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4		
Onboard Serial Port 2	: 2F8/IRQ3		
UART 2 Mode	: Standard		
		ESC: Quit	↑ ↓ → ←: Select Item
		F1: Help	PU/PD/+/-: Modify
		F5: Old Values	(Shift)F2: Color
		F7: Load Setup Defaults	

Fig. 26

A short description of the screen items follows:

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

IDE Primary Master PIO/IDE Primary Slave PIO/IDE Secondary Master PIO/IDE Secondary Slave PIO: 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.

IDE Primary Master UDMA/IDE Primary Slave UDMA/IDE Secondary Master UDMA/IDE Secondary Slave UDMA: Available selection are “Auto” or “Disabled”. To choose “Auto”, the system BIOS will scan the IDE device and decide Ultra DMA supported or not.

On-Chip Primary/Secondary PCI IDE: This item is used to set the onboard IDE controller. The settings are Primary, Secondary, Both or Disabled. The default setting is Both.

USB Keyboard Support: Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

Onboard FDD 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 Auto, Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4 and 2E8/IRQ3. While choosing proper I/O Address/IRQ, be sure not to cause Address conflict with other I/O devices. The default setting is 3F8/IRQ4.

Onboard Serial Port 2: Choose Auto, Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4 and 2E8/IRQ3. While choose proper I/O Address/IRQ, be sure not to cause Address conflict with other I/O devices. The default setting is 2F8/IRQ3.

UART 2 Mode: Choose Standard, SharpIR and IrDA SIR for IrDA serial Interface.

Onboard Parallel Port: Choose None or with three 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.

Parallel Port Mode: Choose SPP, EPP1.7, EPP1.9, ECP, ECP+EPP Mode. Make proper selection with the attached printer port device.

ECP Mode Use DMA: This item will be shown only when you choose the ECP mode, you can select DMA 1/DMA 3 for it.

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 be "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)?

APPENDIX A QUICK GUIDE

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

Function	Jumper Settings
CPU Voltage Selection 3.3V Single Voltage CPU For P54C, P54CT and 3.3V IDT WinChip C6	JP1: short JP7: 1-2 open 3-4 short 5-6 short 7-8 short
3.5V Single Voltage CPU For 54C-VRE, AMD-K5, Cyrix 6x86 and 3.5V IDT WinChip C6	JP1: short JP7: 1-2 short 3-4 short 5-6 short 7-8 short
3.3V (I/O)/2.8V (core) Dual Voltage CPU For P55C, Cyrix 6x86L	JP1: open JP7: 1-2 open 3-4 open 5-6 open 7-8 short
3.3V (I/O)/2.9V (core) Dual Voltage CPU For AMD K6/166, 200, Cyrix 6x86MX-PR166/200/233	JP1: open JP7: 1-2 short 3-4 open 5-6 open 7-8 short
3.3V (I/O)/3.2V (core) Dual Voltage CPU For AMD K6/233 and 266	JP1: open JP7: 1-2 open 3-4 open 5-6 short 7-8 short
3.3V (I/O)/2.2V (core) Dual Voltage CPU For AMD-K6/233 and 266 (Reserved for future)	JP1: open JP7: 1-2 open 3-4 short 5-6 open 7-8 open
CPU Speed Selection For 90MHz Intel Pentium, AMD-K5-PR90 and AMD-K5-PR120 CPU	JP9: 1-2 short JP10: 1-2 short JP12: 1-2 short 3-4 open JP13: 1-2 short
To be continued...	

Function		Jumper Settings	
CPU Speed Selection	For 100MHz and 233MHz Intel Pentium, AMD-K6/233, AMD-K5-PR100 and AMD-K5-PR150 CPU	JP9:	1-2 short
		JP10:	1-2 short
		JP12:	1-2 open 3-4 open
		JP13:	1-2 short
	For 110MHz Cyrix 6x86-P133+ CPU	JP9:	2-3 short
		JP10:	1-2 short
		JP12:	1-2 short 3-4 short
		JP13:	1-2 short
	For 120MHz Intel Pentium and Cyrix 6x86-P150+ CPU	JP9:	2-3 short
	JP10:	1-2 short	
	JP12:	1-2 short 3-4 open	
	JP13:	1-2 short	
For 133MHz Intel Pentium, AMD-K5-PR133 (REV C) and Cyrix 6x86L-P166+ CPU	JP9:	2-3 short	
	JP10:	1-2 short	
	JP12:	1-2 open 3-4 open	
	JP13:	1-2 short	
For 150MHz Intel Pentium and Cyrix 6x86MX-PR166 CPU	JP9:	2-3 short	
	JP10:	2-3 short	
	JP12:	1-2 short 3-4 open	
	JP13:	1-2 short	
For 150MHz Cyrix 6x86L/MX-PR200+ CPU (for future support only)	JP9:	2-3 short	
	JP10:	1-2 short	
	JP12:	1-2 open 3-4 short	
	JP13:	1-2 short	
For 166MHz Intel Pentium, AMD-K6/166 and AMD-K5-PR166 CPU	JP9:	2-3 short	
	JP10:	2-3 short	
	JP12:	1-2 open 3-4 open	
	JP13:	1-2 short	
For 180MHz IDT WinChip C6-180 CPU (for future support only)	JP9:	1-2 short	
	JP10:	2-3 short	
	JP12:	1-2 short 3-4 open	
	JP13:	1-2 short	
For 200MHz Intel Pentium, AMD-K6/200 and IDT WinChip C6-200(for future support only) CPU	JP9:	1-2 short	
	JP10:	2-3 short	
	JP12:	1-2 open 3-4 open	
	JP13:	1-2 short	
To be continued...			

Appendix A

Function		Jumper Settings	
CPU Speed Selection	For 233MHz Cyrix 6x86MX-PR233 CPU (Reserved)	JP9:	2-3 short
		JP10:	2-3 short
		JP12:	1-2 open
			3-4 short
		JP13:	1-2 short
	For 266MHz AMD-K6/266 CPU (Reserved)	JP9:	2-3 short
		JP10:	1-2 short
		JP12:	1-2 open
			3-4 open
		JP13:	2-3 short
System ROM Selection	5V Flash EPROM	JP4:	2-3 short
	12V Flash EPROM	JP4:	1-2 short
Clear CMOS Data	Normal Mode	JP3:	short
		JP6:	open
	Reset Content of RTC	JP3:	open
		JP6:	short

