PAM-0073I

High Performance

Pentium PCI ATX Mainboard

User's Guide

Edition 2.00

P/N: 155100-8644

EPA POLLUTION PREVENTER

CAUTION

The motherboard is an electrostatic sensitive device. Don't open or handle except at a static-free workstation.

POWER OFF

It needs to hold the power switch 4 seconds to turn off the power.

CONTENTS

CHAPTER 1 INTRODUCTION

Preface

The motherboard is a mini ATX form factor high performance all in one mainboard. It is developed around the pentium microprocessor with 64 bit access to data transfer and MMX technology. It includes Intel 82430TX System Chipset, SMC 669 Super I/O Chip.

Features

Processor

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

Chipset

- Intel 82439TX (Intel 82430TX System Controller)
- Intel 82371AB (PCI ISA IDE Xcelerator)
- SMC 669 (Super I/O Controller)

Cache Size

- Built in 0/256/512KB 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 keyboard and PS/2 mouse connector is provided.
- IrDA or Fast IR is provided.
- Two standard USB connectors are provided.

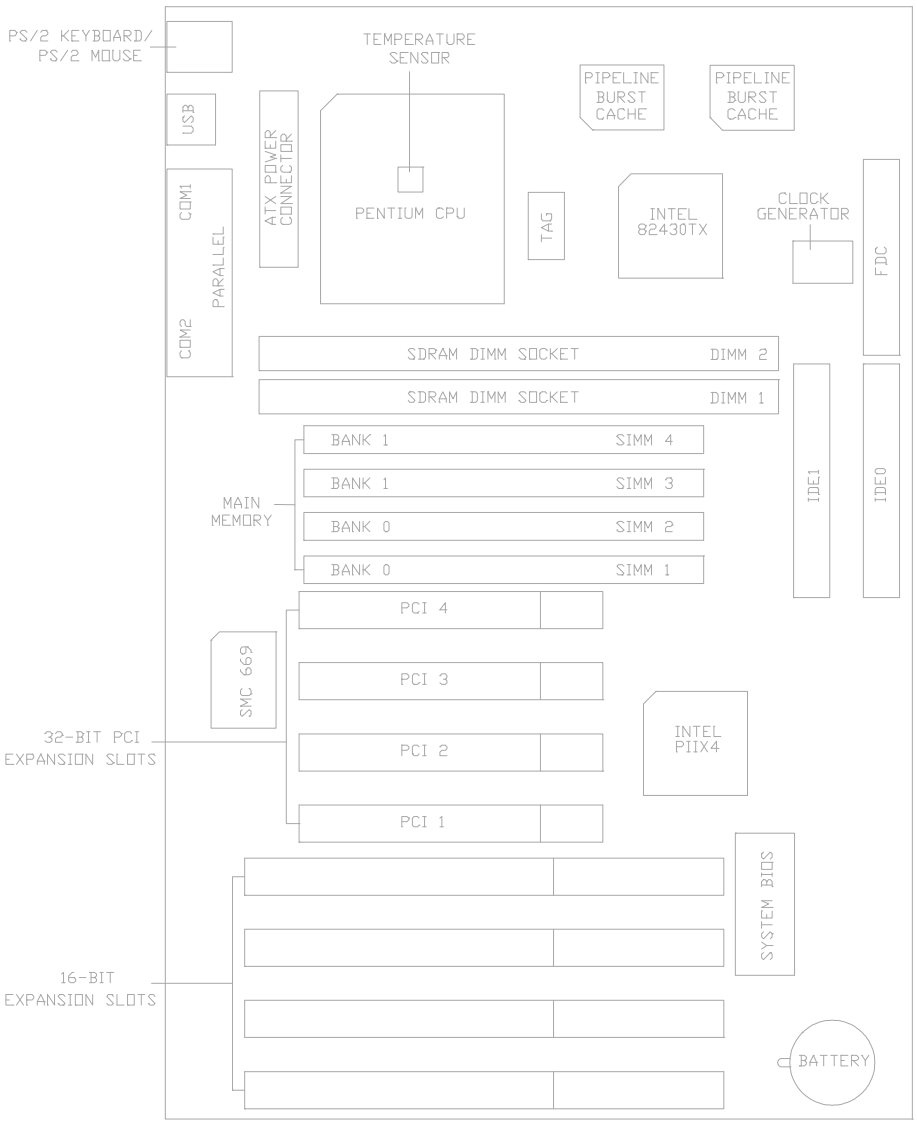


Fig. 1 Key Components of the Mainboard

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 LS-120, 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.

System BIOS

- Award BIOS (1M Flash ROM).

Slots

- Four PCI slots
- Four ISA slots

Others

- CPU overheat alarm system.

Form Factor

- 304mm (W) x 210mm (L) 4 Layer

Environment

Working Specifications

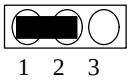
Actual Field MTBF (hours)	104,515 hours
Preventive Maintenance	Not Required

Environmental Limits

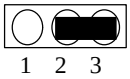
	Operating	Non-operating
Temperature	0 to 50 degree Celsius	-10 to 65 Degree Celsius
Relative Humidity (without condensation)	8 to 85%	5 to 95%
Altitude	10,000ft	40,000ft
Vibration	1,000Hz	
Electricity	4.75 ~ 5.25V	

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.

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.)

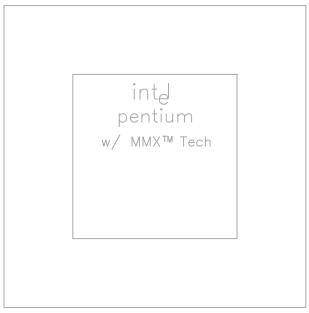


Fig. 2b CPU Description (Top Side)

	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 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.)

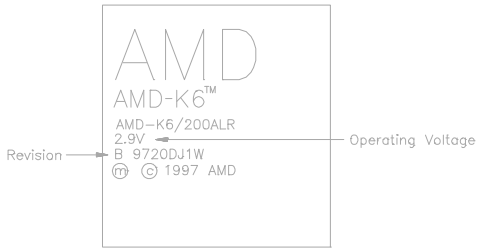


Fig. 2c CPU Description
(Top Side)

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.)

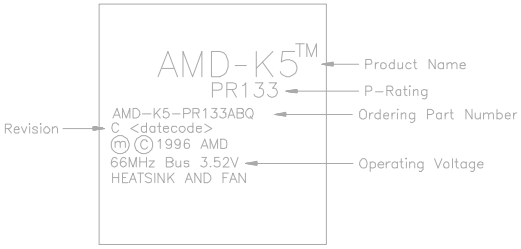


Fig. 2d CPU Description
(Top Side)

2.2.5 CYRIX 6x86 CPU

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

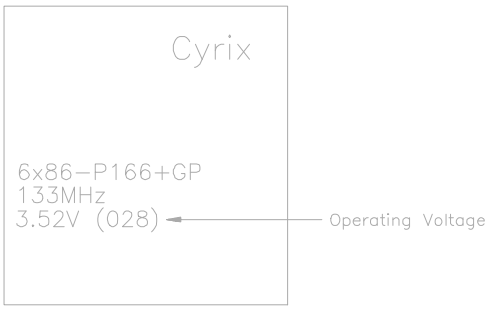


Fig. 2e CPU Description
(Top Side)

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 CPU	3.3V	2.9V
Cyrix 6x86L CPU	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

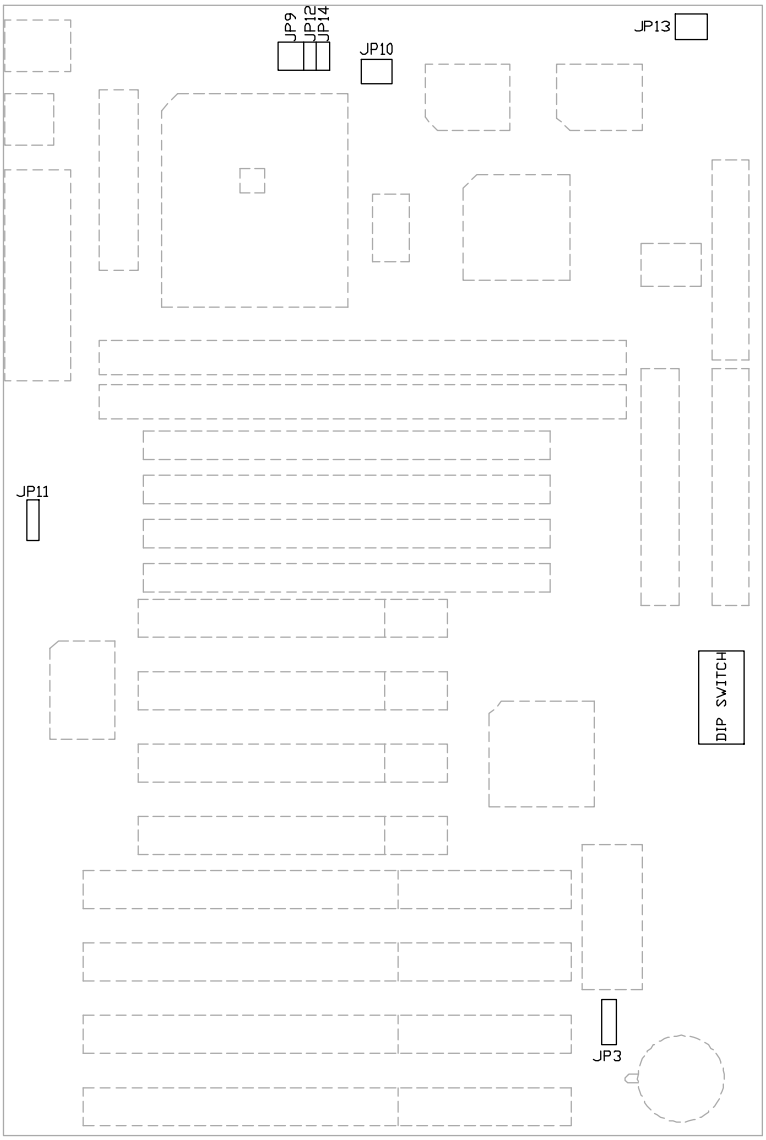


Fig. 3 Connector Location of the mainboard

2.4 CPU VOLTAGE

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

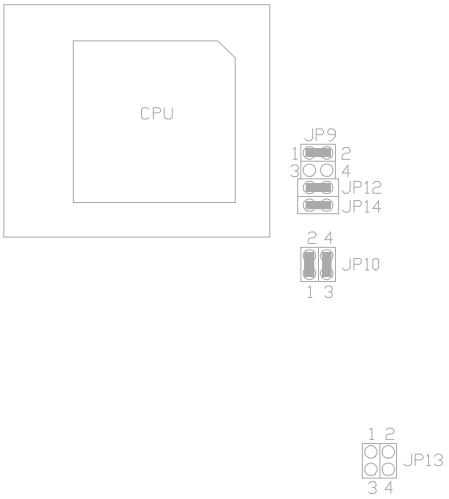


Fig. 4a CPU Type - 3.3V

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

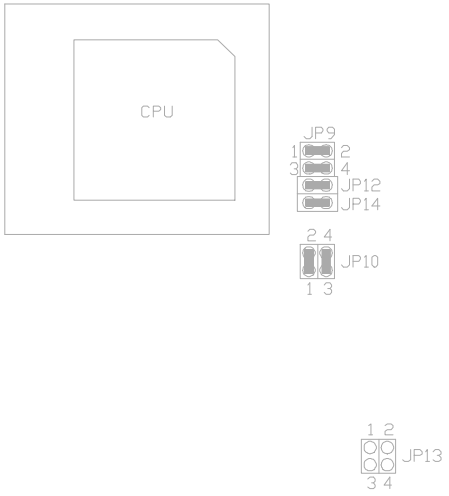
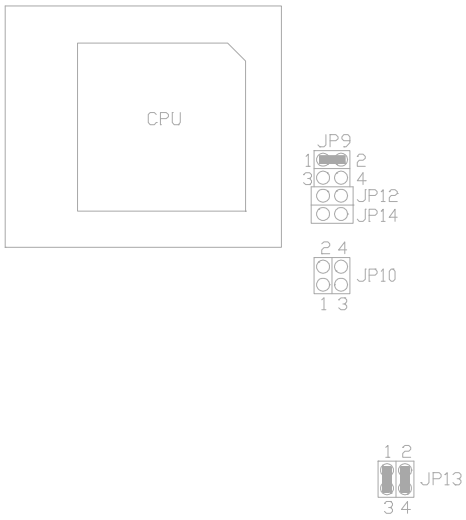


Fig. 4b CPU Type - 3.5V

3. 3.3V (I/O)/2.2V (core) Dual Voltage CPU: 2.2V AMD-K6 and AMD-K6-2



4. 3.3V (I/O)/2.8V (core) Dual Voltage CPU: P55C, Cyrix 6x86L

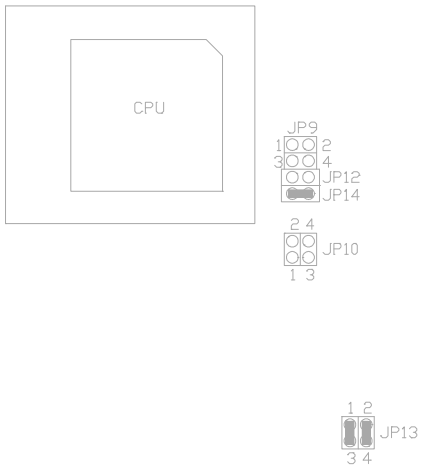


Fig. 4d CPU Type - 3.3V/2.8V

5. 3.3V (I/O)/2.9V (core) Dual Voltage CPU: 2.9V AMD-K6, Cyrix 6x86MX and Cyrix M II

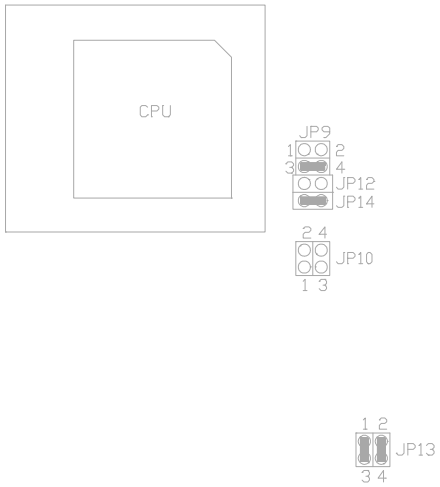


Fig. 4e CPU Type - 3.3V/2.9V

6. 3.3V (I/O)/3.2V (core) Dual Voltage CPU: 3.2V AMD-K6/233

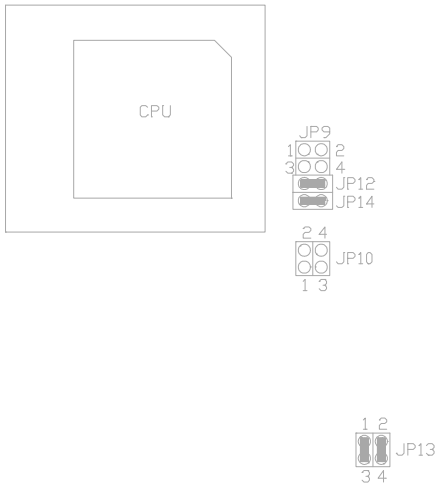


Fig. 4f CPU Type - 3.3V/3.2V

2.5 CPU SPEED (U13)

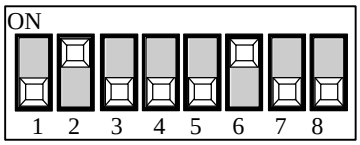


Fig. 5

Note: U13-1 OFF & U13-2 ON – Reserved for 3.3V CPU I/O voltage setting

CPU Type	Freq.	Ratio	Bus Freq.	Freq. Ratio Setting			Bus Freq. Setting		
				U13-3	U13-4	U13-5	U13-6	U13-7	U13-8
Intel Pentium	90MHz	1.5x	60MHz	OFF	OFF	OFF	ON	OFF	OFF
Intel Pentium	100MHz	1.5x	66MHz	OFF	OFF	OFF	OFF	OFF	OFF
Intel Pentium	120MHz	2.0x	60MHz	ON	OFF	OFF	ON	OFF	OFF
Intel Pentium	133MHz	2.0x	66MHz	ON	OFF	OFF	OFF	OFF	OFF
Intel Pentium	150MHz	2.5x	60MHz	ON	ON	OFF	ON	OFF	OFF
Intel Pentium	166MHz	2.5x	66MHz	ON	ON	OFF	OFF	OFF	OFF
Intel Pentium	200MHz	3.0x	66MHz	OFF	ON	OFF	OFF	OFF	OFF
Intel Pentium w/MMX	166MHz	2.5x	66MHz	ON	ON	OFF	OFF	OFF	OFF
Intel Pentium w/MMX	200MHz	3.0x	66MHz	OFF	ON	OFF	OFF	OFF	OFF
Intel Pentium w/MMX	233MHz	3.5x	66MHz	OFF	OFF	OFF	OFF	OFF	OFF
AMD-K5-PR120	120MHz	2.0x	60MHz	ON	OFF	OFF	ON	OFF	OFF
AMD-K5-PR133	133MHz	2.0x	66MHz	ON	OFF	OFF	OFF	OFF	OFF
AMD-K5-PR166	166MHz	2.5x	66MHz	ON	ON	OFF	OFF	OFF	OFF
AMD-K6/166	166MHz	2.5x	66MHz	ON	ON	OFF	OFF	OFF	OFF
AMD-K6/200	200MHz	3.0x	66MHz	OFF	ON	OFF	OFF	OFF	OFF
AMD-K6/233	233MHz	3.5x	66MHz	OFF	OFF	OFF	OFF	OFF	OFF
AMD-K6/266	266MHz	4.0x	66MHz	ON	OFF	ON	OFF	OFF	OFF
AMD-K6-2/266	266MHz	4.0x	66MHz	ON	OFF	ON	OFF	OFF	OFF
AMD-K6/300	300MHz	4.5x	66MHz	ON	ON	ON	OFF	OFF	OFF
Cyrix M II-300	225MHz	3.0x	75MHz	OFF	ON	OFF	OFF	ON	OFF
Cyrix M II-300	233MHz	3.5x	66MHz	OFF	OFF	OFF	OFF	OFF	OFF
Cyrix 6x86L-PR150	120MHz	2.0x	60MHz	ON	OFF	OFF	ON	OFF	OFF
Cyrix 6x86L-PR166	133MHz	2.0x	66MHz	ON	OFF	OFF	OFF	OFF	OFF
Cyrix 6x86L-PR200	150MHz	2.0x	75MHz	ON	OFF	OFF	OFF	ON	OFF
Cyrix 6x86MX-PR166	150MHz	2.5x	60MHz	ON	ON	OFF	ON	OFF	OFF
Cyrix 6x86MX-PR200	150MHz	2.0x	75MHz	ON	OFF	OFF	OFF	ON	OFF
Cyrix 6x86MX-PR200	166MHz	2.5x	66MHz	ON	ON	OFF	OFF	OFF	OFF
Cyrix 6x86MX-PR233	188MHz	2.5x	75MHz	ON	ON	OFF	OFF	ON	OFF
Cyrix 6x86MX-PR233	200MHz	3.0x	66MHz	OFF	ON	OFF	OFF	OFF	OFF
IDT WinChip C6-180	180MHz	3.0x	60MHz	OFF	ON	OFF	ON	OFF	OFF
IDT WinChip C6-200	200MHz	3.0x	66MHz	OFF	ON	OFF	OFF	OFF	OFF

Table 1

Reserve for future support

2.6 JP3 - VOLTAGE SELECTION FOR SYSTEM ROM

1. 5V Flash EPROM on System ROM

Fig. 6a

2. 12V Flash EPROM on System ROM

Fig. 6b

2.7 JP11 - RING IN SELECT

COM1

COM2

The motherboard will wake up from sleep mode when a ring in signal is detected from the com port.

2.8 MEMORY CONFIGURATION

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

Four SIMM sockets (SIMM1, SIMM2, 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 SIMM1/SIMM2 must be same.***
The type of SIMM3/SIMM4 must be same.
SIMM1/SIMM2 and DIMM1 cannot co-exist.
SIMM3/SIMM4 and DIMM2 cannot co-exist.

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

Onboard memory is located in two banks:

Bank 0: SIMM1 & SIMM2
OR
DIMM1

Bank 1: SIMM3 & SIMM4
OR
DIMM2

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

Bank 0 (SIMM 1,2/DIMM1)	**Bank 1 (SIMM 3,4/DIMM2)**
Single	None
None	Single
Single	Single
Single	Double
Double	Single
Double	None
None	Double
Double	Double

Table 2

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: 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 time.

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.

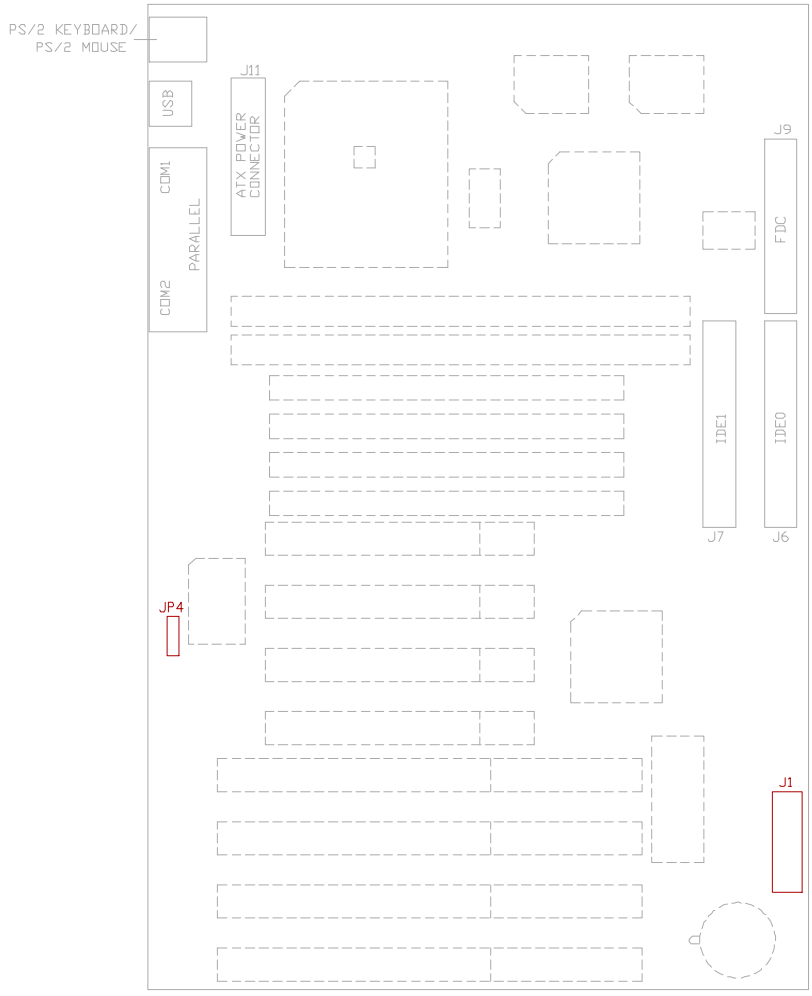


Fig. 7 Connector Location

3.1 J1 - MULTIPLE FUNCTION JUMPER

J1 is a front panel multi-function jumper include speaker, reset, keylock, Harddisk LED, ATX power button. The pin definition is as following figure.

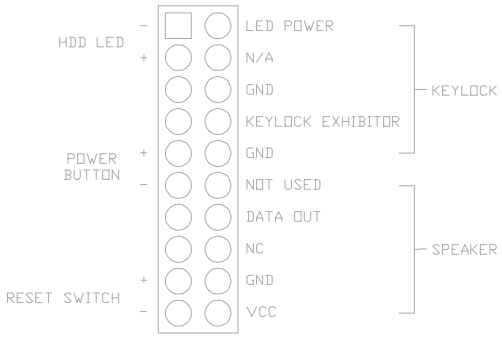


Fig. 8 Multiple Function Jumper

The power is turned on by short the power button once. And it needs to hold the power button about 4 seconds to turn if off when it has not start to display.

3.2 JP4 - IrDA/FAST IR CONNECTOR

JP4 is a four pin connector, which use the UART2 as interface for IrDA. You must also configure the setting through "UART2 Mode" is Integrated Peripheral Setup to select whether UART2 is used for COM2 or HPSIR/SKSIR. The pin definition is as following:

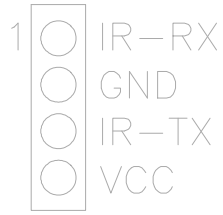


Fig. 9 IrDA/Fast IR Connector

3.3 J11 - ATX POWER CONNECTOR

J16 is a 2x10 pin male header connector. Plug the power connector of the ATX power supply onto the connector.

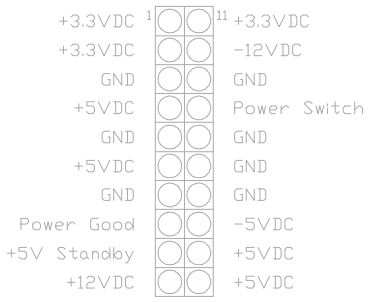


Fig. 10 ATX Power Connector

3.4 J9 - FLOPPY DRIVE CONNECTOR

This connector supports the floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drive.

3.5 J6, J7 - PRIMARY/SECONDARY IDE CONNECTORS

These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to your hard disk.

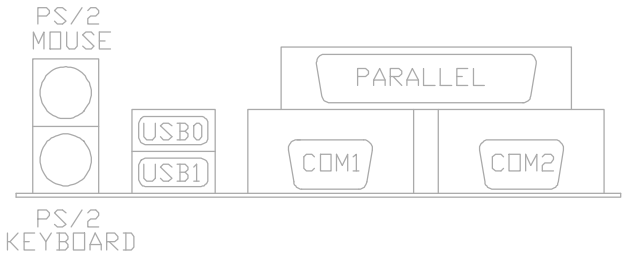


Fig. 11 Connector

3.6 PS/2 KEYBOARD CONNECTOR

This connector is a six-pin female mini DIN connector using a PS/2 plug. If a standard AT size keyboard plugs, you may use the DIN to mini DIN adaptor.

3.7 PS/2 MOUSE CONNECTOR

This connector is a six-pin female mini DIN connector using a PS/2 plug. Plug the jack on the PS/2 keyboard cable into this connector.

3.8 UNIVERSAL SERIAL BUS PORTS 0 & 1

These connectors are two four pin female sockets which are available for connecting USB device.

3.9 PARALLEL PORT CONNECTOR

This is a D-Type 25 pin female connector.

3.10 SERIAL PORT COM1, COM2

This is a D-Type 9 pin male connector for pointing devices or other serial devices.

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

ROM PCI/ISA BIOS (2A59ID1C)
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. 12

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 (2A59ID1C)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

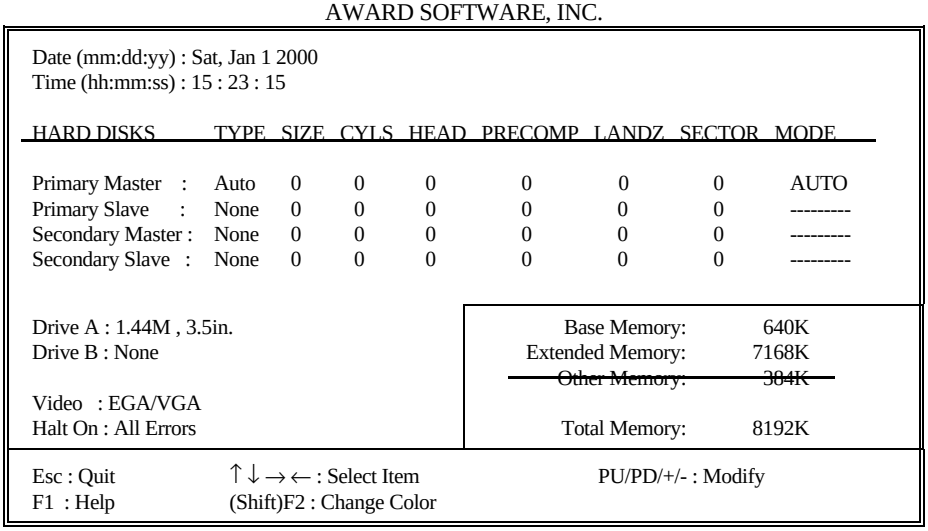


Fig. 13

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

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

Hard Disks Choose from the standard hare disk types 1 to 45. Type 47 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 (2A59ID1C)
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,SCSI	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Numlock Status	: Off	DC000-DFFFF Shadow	: Disabled
Boot Up System Speed	: High		
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	: Enabled		
OS Select For DRAM > 64MB	: Non-OS2		
HDD S.M.A.R.T. capability	: Enabled	ESC: Quit	↑ ↓ → ←: Select Item
Report No FDD For Win95	: No	F1: Help	PU/PD/+/-: Modify
		F5: Old Values	(Shift)F2: Color
		F7: Load Setup Defaults	

Fig. 14 BIOS Setup Defaults

A short description of the screen items follows:

Virus Warning: When enable, you received 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".

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

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.

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

Typematic Rate (Chars/Sec): 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: Options are Non-OS2 or OS2. Select OS2 if the system memory is larger than 64MB while running OS/2.

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 Win95: 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-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.

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 (2A59ID1C)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	
DRAM Timing	: 70ns	
Fast EDO Lead Off	: Disabled	
SDRAM (CAS Lat/RAS-to-CAS)	: 3/3	
SDRAM Speculative Read	: Disabled	
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 F7: Load Setup Defaults

Fig. 15

A short description of the screen items follows:

Auto Configuration: When Auto Configuration is Enabled, BIOS will sets the DRAM, cache timing values according to CPU speed. Otherwise, set it manually.

DRAM Timing: Choose 60ns or 70ns according to the DRAM SIMM Module on the motherboard. Only visible when enable Auto Configuration item.

Fast EDO Lead Off: Select Enabled only for EDO DRAMs in either a synchronous cache or a cacheless system. It causes a 1-HCCK pull-in all read leadoff latencies for EDO DRAMs. Select Disabled if any of the DRAM rows are populated with FPM DRAMs.

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

SDRAM Speculative Read: If Enabled, the CPU will issue predict commands to access the DRAM. If a miss occurs, the CPU will cancel this command. Some operating systems under certain situations have a problem utilizing this feature so it is normally Disabled.

Memory Hole At 15M-16M: Choose Enabled or Disabled. "Enabled" allows some linear VGA cards to run larger frame port, or it can be reserved for some operating system.

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 cycles.

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 (2A59ID1C)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: User Define	** Reload Global Timer Events **	
PM Control by APM	: Yes	IRQ [3-8, 9-15], NMI	: Enabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0	: Enabled
Video off After	: Suspend	Primary IDE 1	: Enabled
MODEM Use IRQ	: 3	Secondary IDE 0	: Enabled
Suspend Mode	: Disabled	Secondary IDE 1	: Enabled
HDD Power Down	: Disabled	Floppy Disk	: Enabled
Suspend Mode Option	: PowerOn Suspend	Serial Port	: Enabled
Throttle Duty Cycle	: 62.5%	Parallel Port	: Enabled
ZZ Active in Suspend	: Disabled		
VGA Active Monitor	: Enabled		
Soft-Off by PWR-BTTN	: Delay 4 Sec.		
Resume by Ring	: Enabled	ESC: Quit	↑↓→←: Select Item
IRQ 8 Break Suspend	: Disabled	F1: Help	PU/PD/+/-: Modify
		F5: Old Values	(Shift)F2: Color
		F7: Load Setup Defaults	

Fig. 16

A short description of the screen items follows:

Power Management: Available selection are "Disabled", "User Define", "Max Saving" and

"Disabled" will disable all the power saving functions.
"User Define" makes the time period waiting for Suspend Mode to be programmed.
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 "Suspend" 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".

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.

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.

Suspend Mode Option: Available options are "PowerOn Suspend" and "Suspend to Disk". For PowerOn Suspend" option, the system will enter the suspend mode with the power supply still switching on. For "Suspend to Disk" option, the system will fully power off the system when it entering the suspend mode. With installing the Award Zero-Volt Data-Suspend Utility (**ZVHDD**), the system will resume back when the system power on again.

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

Soft-Off by PWR-BTTN: Available options are "Instant-Off" and "Delay 4 sec.". For "Instant-Off" option, the power of the system will be switched off at once when the power button is pressed for turn it off. For "Delay 4 sec." option, the power of the system will be switched off with 4 second later after the power button is pressed. **For "Suspend to Disk" feature, this option should be set to "Delay 4 sec." option**.

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.

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 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 (2A59ID1C)
PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed	: No	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	: PCI/ISA PnP	Used MEM base addr	: C800
IRQ-4 assigned to	: PCI/ISA PnP	Used MEM Length	: 8K
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. 17

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: Set this option to Yes if the operating system installed in the computer is Plug and Play-aware (e.g. Windows 95).

Resources Controlled By: The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them..

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

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 (2A59ID1C)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Parallel Port Mode	: ECP+EPP
IDE Primary Master PIO	: Auto	EPP Mode Select	: EPP1.9
IDE Primary Slave PIO	: Auto		
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 IDE	: Enabled		
On-Chip Secondary IDE	: Enabled		
USB Keyboard Support	: Disabled		
Onboard FDD Controller	: Enabled		
Onboard UART1	: 3F8/IRQ4		
Onboard UART2	: 2F8/IRQ3		
Onboard UART2 Mode	: Standard	ESC: Quit	↑ ↓ → ←: Select Item
		F1: Help	PU/PD/+/-: Modify
		F5: Old Values	(Shift)F2: Color
Onboard Parallel Port	: 3BC/IRQ7	F7: Load Setup Defaults	

Fig. 18

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 or IRQ 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 choosing proper I/O Address/IRQ, be sure not to cause Address or IRQ conflict with other I/O device. The default setting is 2F8/IRQ3.

Onboard UART2 Mode: Choose Standard set UART2 in RS232 mode, choose ASKIR (Auplitude Shift Keyed Infrared Port) or HPSIR (IrDA-compliant Serial Infrared Port) for IrDA serial interface mode.

IR Duplex Mode: This item will be shown only when **UART2 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 (simultaneous two-direction transmission) or half duplex mode (transmission in one-direction only at a time) correspondingly.

Use IR Pins: This item will be shown only when **UART2 Mode** is selected to ASKIR or HPSIR. If use JP6 (IrDA IR Connector) as IR Interface, choose the "IR-RX2TX2" option. If use JP20 (Serial Port COM2 Connector) as IR Interface, choose the "IR-RX TX" option.

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 or IRQ conflict with other I/O devices.

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

EPP Mode Select: 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 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)?

4.13 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)?

CHAPTER 5 FLASH MEMORY UTILITY

Make sure the system is running in real mode. This utility will not operate if the system is under protected mode or virtual mode. This means that you cannot reprogram the motherboard BIOS under the Windows environment or with any memory management software, including HIMEM.SYS.

To run the utility, change to the directory containing FLASH520.EXE and BIOS file, then at the DOS Prompt, type **FLASH520 BIOSFILE.ROM <Enter>**.

The utility will load the BIOS, and the following message will shrink on the screen:

"Press "Y" to continue, "N" to Reboot"

After the "Y" is pressed, the utility will program the BIOS file to the Flash EPROM. When the process is successful, the following message appears:

"Press Any Key to Reboot"

Follow the instruction and the system will reboot with new BIOS.

APPENDIX A QUICK GUIDE

The table below summaries 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	JP9: JP10: JP12: JP13: JP14:	1-2 short 3-4 open short short 1-3 open 2-4 open short
	3.5V Single Voltage CPU For 54C-VRE, AMD-K5, Cyrix 6x86 and 3.5V IDT WinChip C6	JP9: JP10: JP12: JP13: JP14:	1-2 short 3-4 short short short 1-3 open 2-4 open short
	3.3V (I/O)/2.2V (core) Dual Voltage CPU For 2.2V AMD-K6 and AMD-K6-2	JP9: JP10: JP12: JP13: JP14:	1-2 short 3-4 open open open 1-3 short 2-4 short open
	3.3V (I/O)/2.8V (core) Dual Voltage CPU For P55C, Cyrix 6x86L	JP9: JP10: JP12: JP13: JP14:	1-2 open 3-4 open open open 1-3 short 2-4 short short
	3.3V (I/O)/2.9V (core) Dual Voltage CPU For 2.9V AMD-K6, Cyrix 6x86MX and Cyrix M II	JP9: JP10: JP12: JP13: JP14:	1-2 open 3-4 short open open 1-3 short 2-4 short short
	3.3V (I/O)/3.2V (core) Dual Voltage CPU For 3.2V AMD-K6/233	JP9: JP10: JP12: JP13: JP14:	1-2 open 3-4 open open short 1-3 short 2-4 short short
To be continued...			

Function		Jumper Settings	
CPU Speed Selection ***Reserve*** **U13-1 OFF** **U13-2 ON** **U13-8 OFF**	For 90MHz Intel Pentium, AMD-K5-PR90 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	OFF OFF OFF ON OFF
	For 100MHz and 233MHz Intel Pentium, AMD-K6/233, AMD-K5-PR100, AMD-K5-PR150 and Cyrix M II-300, using 66MHz, (for future support only) CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	OFF OFF OFF OFF OFF
	For 120MHz Intel Pentium, AMD-K5-PR120 and Cyrix 6x86L-PR150 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	ON OFF OFF ON OFF
	For 133MHz Intel Pentium, AMD-K5-PR133 (REV C) and Cyrix 6x86L-PR166 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	ON OFF OFF OFF OFF
	For 150MHz Intel Pentium and Cyrix 6x86MX-PR166 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	ON ON OFF ON OFF
	For 150MHz Cyrix 6x86L/MX-PR200 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	ON OFF OFF OFF ON
	For 166MHz Intel Pentium, AMD-K6/166 and AMD-K5-PR166 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	ON ON OFF OFF OFF
	For 180MHz IDT WinChip C6-180 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	OFF ON OFF ON OFF
	For 200MHz Intel Pentium and AMD-K6/200, IDT WinChip C6-200 and Cyrix 6x86MX-PR233 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	OFF ON OFF OFF OFF
To be continued…			

Function		Jumper Settings	
CPU Speed Selection ***Reserve*** **U13-1 OFF** **U13-2 ON** **U13-8 OFF**	For Cyrix M II-300, using 75MHz, (for future support only) CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	OFF ON OFF OFF ON
	For 266MHz AMD-K6/266 and AMD-K6-2/266 (for future support only) CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	ON OFF ON OFF OFF
	For 300MHz AMD-K6/300 CPU	U13-3: U13-4: U13-5: U13-6: U13-7:	ON ON ON OFF OFF
System ROM Selection	5V Flash EPROM	JP3:	2-3 short
	12V Flash EPROM	JP3:	1-2 short
Ring In Selection	COM1	JP11:	1-2 short
	COM2	JP11:	2-3 short