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Chapter 1

1-1 Preface

Welcome to use the **J-530CF** mainboard. This mainboard is based on Pentium® processor PC/AT compatible system with ISA bus and PCI local bus. Also for this board including some special designs like, support 100MHz frequency, 3D AGP VGA chip , 3D PCI Audio chip, ACPI/AMP power management & powerful performance and so on. We think you will enjoying your personal computer because of your right choice.

1-2 Key Feature

The **J-530CF** is design for the PC user who wants a great many features in a small package . This motherboard :

- **Support 100MHz Bus Frequency for AMD-K6-2/300/350/400, AMD-K6-3/400/450 .**
- **Support SDRAM clock selectable in 100MHz by jumper setting , let user more choice when use SDRAM.**
- **Built-In High performance 3D AGP VGA:**
 - * Support share memory 2MB to 8MB selectable in BIOS SETUP.
 - * 64 bits memory data interface.
 - * Integrated programmable 24-bit true-color RAMDAC up to 230MHz pixel clock.
 - * Integrated two 96x64 video line buffers for MPEG video playback.
 - * Support 64 bit memory data bus interface.
 - * Integrated a high performance and high quality 3D engine.
 - * Support DIC, Direct Draw Driver.
 - * Support AGP Spec.1.0 compliant, 1xmode(66MHz), 2xmode(133MHz)
- **Built-In High performance 3D PCI Audio:**
 - * Support PCI Bus Spec 2.1 compliant.
 - * Full native DOS games compatibility via three technologies: TDMA(Transparent DMA), DDMA(Distributed DMA), PC/PCI.
 - * High-Quality ESFM music synthesizer.
 - * Integrated 3D audio effect processor.
 - * Full-duplex operation for simultaneous record and playback.
 - * Meets PC 97/98 and WHQL Specifications.
- **Multi-Speed Support :** support 66/75/83/95/100MHz Host Bus Frequency for Intel Pentium® processor with MMX™ technology ,AMD K5/K6™/K6-2/K6-3,Cyrix 6x86 M1/M2,IDT Winchip™ CPU on a ZIF Socket7.
- **Chipset:** SiS 530/5595 AGPset chip with I/O subsystems, and ESS 1938 3D PCI Audio chip.
- **L2 Cache :** Provide on board 512K/1MB Pipelined Burst SRAM to increase system performance.

-
-
- **DRAM Memory Support:** support 3 168-pin DIMMS(3.3V)from a memory size between 8MB to 768MB.
 - **ISA and PCI expansion Slots:** Privodes two 16-bit ISA slots, three PCI slots.
 - **Super Multi-I/O:** Provides two high-Speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. UART2 can also be directed to the Infrared Module for wireless connections. Two floppy drives of either 5.25" or 3.5" (1.44MB or 2.88MB) are also supported without an external card.
 - **PCI Bus Master IDE Controller and ULTRA DMA 33:** On-board PCI Bus Master IDE controller with two connectors that supports four IDE devices in two channels, provides faster data transfer rates, and supports Enhanced IDE devices such as Tape Backup, CD-ROM drives and LS-120. This controller also supports PIO Modes 3 and 4 and Bus Master IDE DMA 33Mbyte/Sec.
 - **ACPI supporting for OS Directed Power Management**
 - Ring-in Wake up:** When Ring-In the system can wake up from SMI Mode.
 - Ring-in Power On:** When Ring-In the system can power on automatic by this function.
 - RTC Power On:** Power On function, you can setting RTC alarm to power on the system at the time length you setting .
 - Power Button:** Press the button will place the system power on/off .
 - Software off when use ATX power supply.**
 - **Power Support:** Efficient PWM switching power instead of traditional Linear Voltage Regulator to prevent power component from being burned-out.
 - **Meets PC99 Requirements.**
 - **Optional IRDA and PS/2:** This motherboard supports an optional infrared port module for wireless interface and PS/2 mouse cable set.
 - **USB Port Connector:** This motherboard supports two USB port connectors for USB devices.
 - **Bundle with "Xstore Pro" High Performance ULTRA DMA 33 Driver to improve IDE transfer rate up to 33Mbyte/sec. Increase System Performance 10% more, Hard Drive performance 60% more.**
 - **Micro ATX Form Factor:** Dimensions 22cm x 24.5cm.

Chapter 2

Hardware Installation

2-1 Unpacking

This mainboard package should contain the following:

- The J-530CF mainboard
- USER'S MANUAL for mainboard
- Cable set for IDE x1, Floppy x1, COM x1
- CD for Drivers PACK

The mainboard contains sensitive electronic components which can be easily damaged by electron-static, so the mainboard should be left in its original packing until it is installed.

Unpacking and installation should be done on a grounded anti-static mat.

The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

Inspect the mainboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the mainboard carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damage.

Press down on all of the socket IC's to make sure that they are properly inserted. Do this only on with the board placed on a firm flat surface.

Warning: Do not apply power to the board if it has been damaged.

You are now ready to install your mainboard. The mounting hole pattern on the mainboard matches the IBM-AT system board.

It is assumed that the chassis is designed for a standard IBM™ XT/AT™ main board mounting. Place the chassis on the anti-static mat and remove the cover.

Take the plastic clips, Nylon stand-off and screws for mounting the system board, and keep them separate.

2-2 Mainboard Layout

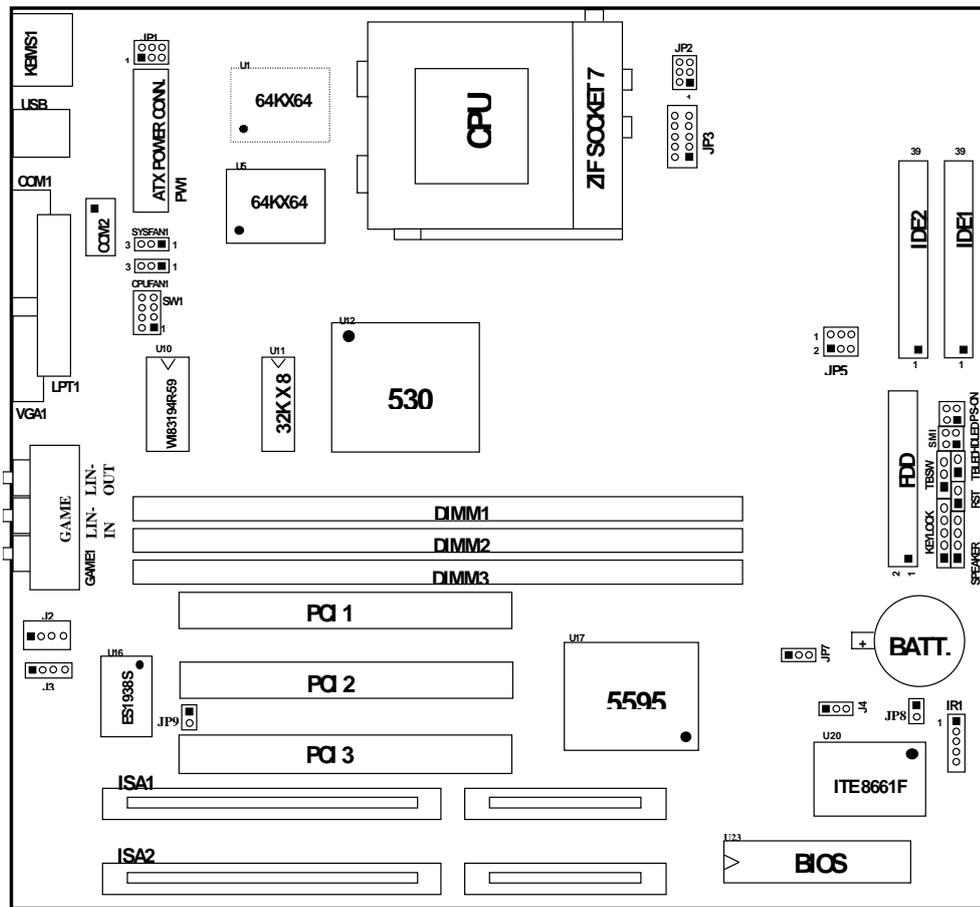


Figure 2-1

Jumpers

- | | |
|------------|--|
| 1) SW1,JP2 | p. 6 Jumpers for CPU type selection |
| 2) JP7 | p. 8 CMOS RAM (Normal/Clear CMOS Data) (Yellow Color selector) |
| 3) JP3 | p. 6 CPU Voltage selector |

Connectors

- | | |
|--------------------------|--|
| 1) PW1 | p. 10 ATX Power connector (20-pin Block) |
| 2) KBMS1 | p. 10 PS/2 Mouse & PS/2 Keyboard connector(6-pin Female) |
| 3) LPT1 | p. 10 Parallel Port connector (25-pin Female) |
| 4) COM1
VGA1 | p. 11 Serial Port COM1 (9-pin Male)
VGA Port VGA1 (15-pin Female) |
| 5) COM2 | p. 11 Serial Port COM2 (10-Pin Block) |
| 6) GAME | p. 11 Audio and Game connector |
| 7) FDD | p. 12 Floppy Driver connector (34-pin Block) |
| 8) IDE1 | p. 12 Primary IDE connector (40-pin Block) |
| 9) IDE2 | p. 12 Secondary IDE connector (40-pin Block) |
| 10) HDLED ((SMI s/w 1&3) | p. 13 IDE activity LED connector (2-pin) |
| 11) TBLED | p. 13 Turbo LED switch (3-pin) |
| 12) RESET | p. 13 Reset Switch lead (2-pin) |
| 13) KEYLOCK/Power LED | p. 13 Keyboard Lock Switch Power/LED (5-pin) |
| 14) SPEAKER | p. 13 Speaker connector (4-pin) |
| 15) IR1 | p. 14 Infrared Module connector (5-pin) |
| 16) USB | p. 14 USB Port connector |
| 17) CPUFAN1 | p. 14 CPU Fan connector |
| 18) SYSFAN1 | p. 14 Extra fanning system connectors |
| 19) PS-ON | p. 15 Power-On Button connector |
| 20) J2,J3 | p. 15 CD-ROM Audio connector (4-pin) |
| 21) JP9 | p. 15 On board sound chip Enabled/Disabled |
| 22) J4 | p. 15 Wake On Lan (3-pin) |

Expansion Slots

- | | |
|-----------------|---|
| 1) DIMM Slots | p. 8 DRAM Memory Expansion slots |
| 2) ZIF SOCKET 7 | p. 9 Socket for Central Processing Unit (CPU) |
| 3) AGP Slot | p. 9 AGP Expansion slot |
| 4) ISA 1,2 | p. 9 16-bit ISA Bus Expansion slots |
| 5) PCI 1,2,3 | p. 9 32-bit PCI Bus Expansion slots |

2-3 Installation Steps

Before using your computer, you must follow the steps as follows:

1. Set Jumpers on the Motherboard
2. Install the CPU
3. Install DRAM Modules
4. Install Expansion card
5. Connect Cables, Wires, and Power Supply

2-3-1 Jumper Settings

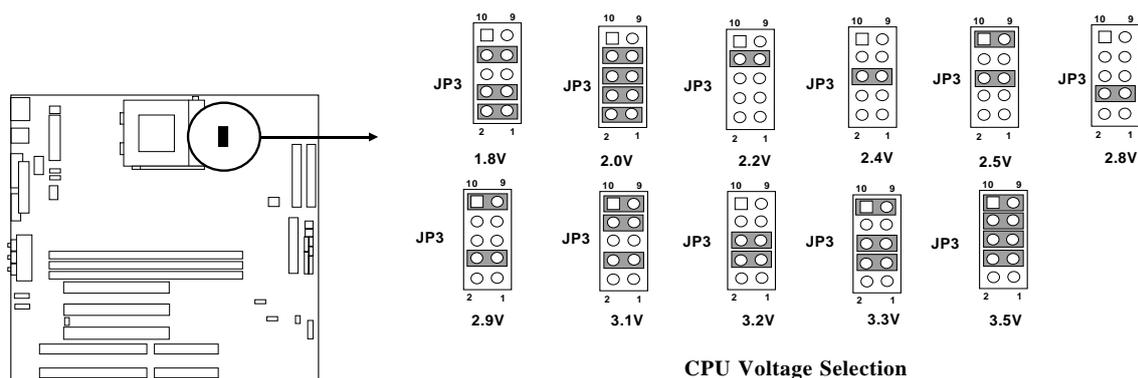
CPU Voltage Selection: JP3 (2x5pin Block)

This jumper is used for adjusting CPU working voltage, for this main board design it can auto detect the single voltage CPU or dual voltage CPU.

The table of JP3 CPU voltage selection {S : short (ON) , O : open (OFF)}

JP3	VID0	VID1	VID2	VID3	VID4
1.8V	O	S	O	S	S
2.0V	O	S	S	S	S
2.2V	O	S	O	O	O
2.4V	O	O	S	O	O
2.5V	S	O	S	O	O
2.8V	O	O	O	S	O
2.9V	S	O	O	S	O
3.1V	S	S	O	S	O
3.2V	O	O	S	S	O
3.3V	S	O	S	S	O
3.5V	S	S	S	S	O

* *If your CPU Type is not including in above table, please refer to the CPU voltage selection on below to choose the correct working voltage for your CPU.*



CPU Type selection: SW1 & JP2

This mainboard designs SW1 to select the CPU external clock (Host Bus Frequency) and JP2 to select the CPU Bus Frequency ratio, the external clock frequency multiplied by Bus frequency ratio is the CPU frequency as the tables below:

§Table for CPU external frequency / SDRAM Clock setting : SW1

#1	#2	#3	#4	CPU Bus Clock	SDRAM Clock
O	S	S	S	66.8 MHz	66.8 MHz
O	S	S	O	75 MHz	75 MHz
O	S	O	S	83.3 MHz	83 MHz
O	S	O	O	95 MHz	95 MHz
O	O	S	S	100 MHz	100 MHz
O	O	S	O	112 MHz	112 MHz
S	S	S	S	66.8 MHz	89 MHz *
S	S	S	O	83.3 MHz	66.8 MHz *
S	S	O	S	95 MHz	63.3 MHz *
S	S	O	O	100 MHz	66.6 MHz *
S	O	S	S	105 MHz	75 MHz *
S	O	S	O	112 MHz	74.4 MHz *

※ SDRAM Clock Asynchronous as CPU Bus frequency let user can use slow speed SDRAM when CPU clock over 83MHz. S : short (ON) O : open (OFF)

§Table for CPU ratio selector : JP2

CPU ratio	BF0	BF1	BF2
1.5 X / 3.5 X	OFF	OFF	OFF
2.0 X	ON	OFF	OFF
2.5 X	ON	ON	OFF
3.0 X	OFF	ON	OFF
4.0 X	ON	OFF	ON
4.5 X	ON	ON	ON
5.0 X	OFF	ON	ON
5.5 x	OFF	OFF	ON

Table for CPU Type selection :

CPU Type	SW1(Bus clock)				JP2 (clock ratio)			Bus clock	Clock ratio
	#1	#2	#3	#4	BF0	BF1	BF2		
233MHz Pentium processor with MMX technology AMD K6-233 Cyrix 6X86 MII 300	O	S	S	S	O	O	O	66MHz	3.5X
200MHz Pentium processor with MMX technology AMD K6-200 Cyrix/IBM 6X86 MII 233	O	S	S	S	O	S	O	66MHz	3.0X
AMD K6/266 AMD K6-2/266	O	S	S	S	S	O	S	66MHz	4.0X
AMD K6/300	O	S	S	S	S	S	S	66MHz	4.5X
AMD K6-2/300	O	O	S	S	O	S	O	100MHz	3.0X
AMD K6-2/333	O	S	O	O	O	O	O	95MHz	3.5X
AMD K6-2/350	O	O	S	S	O	O	O	100MHz	3.5X
AMD K6-2/400,K6-3/400	O	O	S	S	S	O	S	100MHz	4.0X
AMD K6-2/450,K6-3/450	O	O	S	S	S	S	S	100MHz	4.5X
Cyrix 6X86MII-266	O	S	O	S	S	S	O	83MHz	2.5X
Cyrix 6X86MII-300	O	S	O	S	O	O	O	83MHz	3.5X
IDT Winchip-225	O	S	S	O	O	S	O	75MHz	3.0X

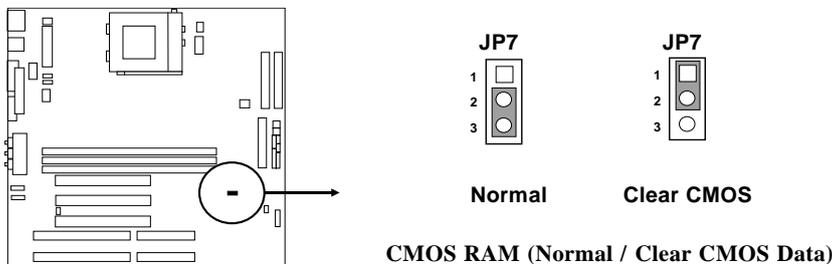
- NOTE:** 1. Before installing the CPU, Please check the CPU Frequency and Clock Ratio from your supplier.
 2. For Cyrix/IBM 6X86MX series, please double check the CPU's Frequency and Clock Ratio.

1. CMOS RAM: JP7 (Yellow color selector)

WARNING: Make sure your computer is POWER OFF when you are CLEAR CMOS.

Connect a jumper Cap over this jumper for a few seconds, will clears information stored in the CMOS RAM Chip that input by user, such as hard disk information and passwords. After CLEAR CMOS, you must enter the BIOS setup (by holding down during power-up) to re-enter BIOS information (see BIOS SETUP).

<u>Selections</u>	<u>JP7</u>
Normal	2-3 (Default)
Clear CMOS	1-2 (momentarily)



2-3-2 System Memory (DRAM)

This main board supports three 168-pins DIMM modules, the Max Memory Size is 768MB. Because of the VGA share memory function, the system must always occupy BANK0 (DIMM1) to booting.

DIMM 1	DIMM 2	DIMM 3	System can be Accept or Not
168-pin DIMM	×	×	Accept
168-pin DIMM	168-pin DIMM	×	Accept
168-pin DIMM	×	168-Pin DIMM	Accept
168-pin DIMM	168-pin DIMM	168-pin DIMM	Accept
×	168-pin DIMM	×	Not Accept
×	×	168-pin DIMM	Not Accept
×	168-pin DIMM	168-pin DIMM	Not Accept

* The SDRAM clock can choice Synchronous(# SD open) or Asynchronous(# SD closed) by the jumper setting of JP2 .

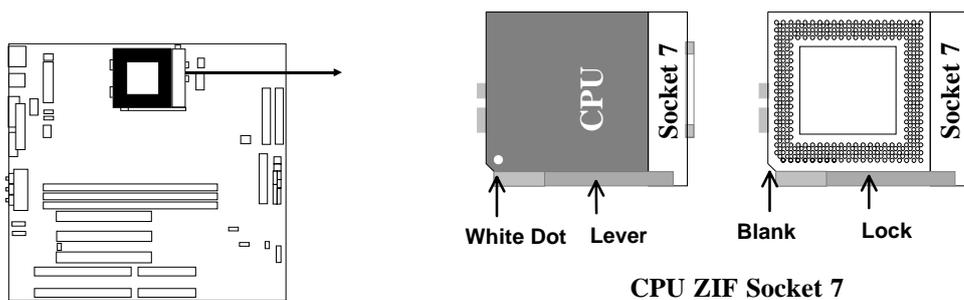
2-4 Central Processing Unit (CPU)

The main board provides a 321-pins ZIF Socket 7. The CPU on mother board must have a fan attached to prevent overheating.

WARNING: *Without a fan, the CPU will be overheated and cause damage to both the CPU and the motherboard.*

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the lever sideways away from the socket then upwards to a 90-degree right angle. Insert the CPU with the white dot as your guide. The white dot should point towards the end of the level. The CPU has a corner pin for three of the four corners, the CPU will only fit in the one orientation as shown as follow. With the added weight of the CPU fan, no force is required to insert the CPU. Once completely inserted, hold down on the fan and close the socket's lever.

IMPORTANT: *You must set jumpers SW1,JP2 "CPU Type selector" on [page 6](#) and jumper JP3 "CPU Voltage Selection" on [page 6](#) depending on the CPU that you install.*



2-5 Expansion Cards

First read your expansion card documentation on any hardware and software settings that may be required to setup your specific card.

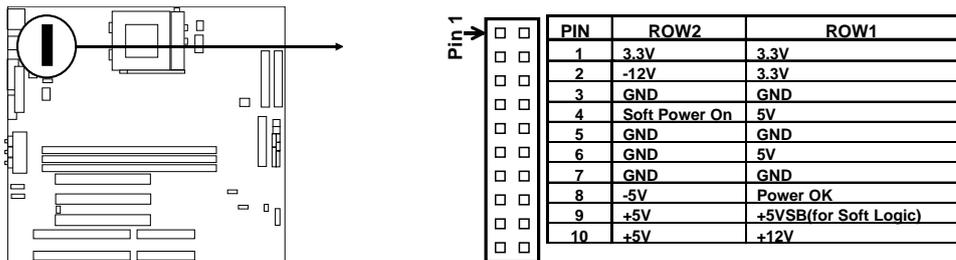
Installation Procedure:

1. Read the documentation for your expansion card.
2. Set any necessary jumpers on your expansion card.
3. Remove your computer's cover.
4. Remove the bracket on the slot you intend to use.
5. Carefully align the card's connectors and press firmly.
6. Secure the card on the slot with the screw you remove in step 4.
7. Replace the computer's cover.
8. Setup the BIOS if necessary.
9. Install the necessary software drivers for your expansion card.

2-6 External Connectors

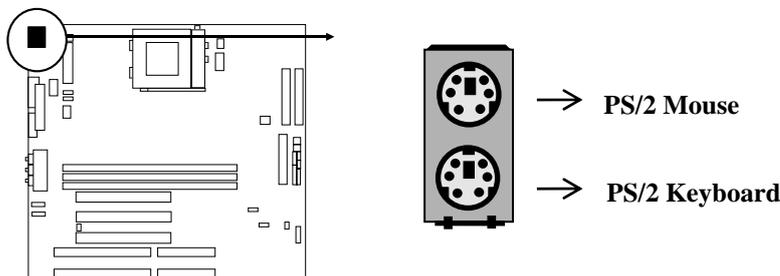
1. ATX Power Connector (20-pins block): PW1

ATX Power Supply connector. This is a new defined 20-pin connector that usually comes with ATX case. The ATX Power Supply allows to use soft power on momentary switch that connect from the front panel switch to 2-pin Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.(* Please wait atleast 4sec , when turn off and turn on the power .)



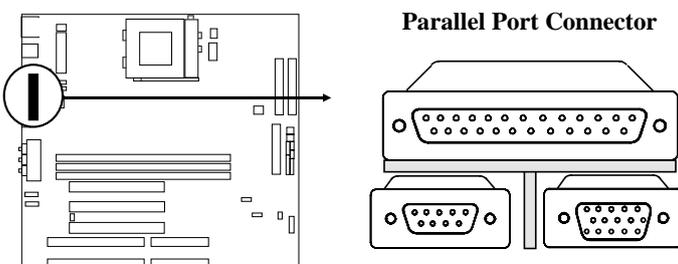
2. PS/2 Mouse & PS/2 Keyboard Connector: KBMS1

The PS/2 Keyboard is a 6-pin miniature DIN connector. It is for a standard PS/2 style keyboard. May also be known as a 101 enhanced keyboard. The PS/2 Mouse connector is a similar 6-pin, miniature DIN connector.



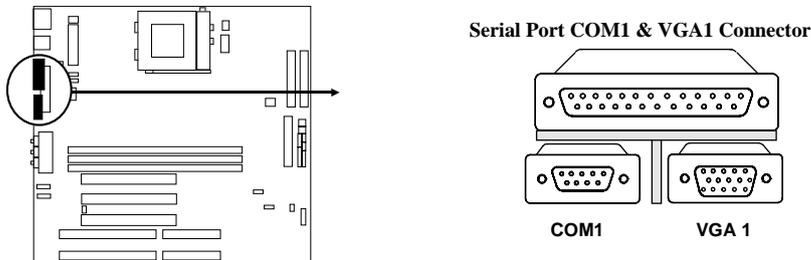
3. Parallel Port Connector (25-pin female): LPT1

Parallel Port connector is a 25-pin D-Subminiature Receptacle connector. The On-board Parallel Port can be disabled through the BIOS SETUP. Please refer to Chapter 3 "INTEGRATED PERIPHERALS SETUP" section for more detail information.



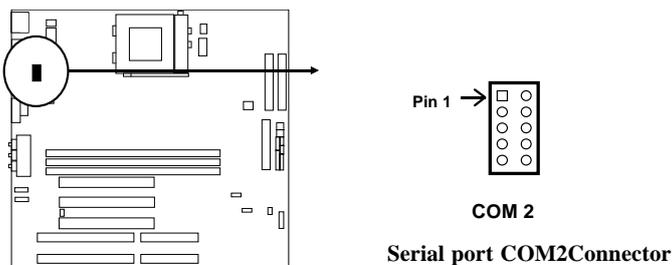
4. Serial Port COM1 and VGA Connector: COM1, VGA1

COM1 is the 9-pin D-Subminiature male connector. VGA1 is the 15-pin D-Subminiature Receptacle connector. The On-board serial port can be disabled through BIOS SETUP. Please refer to Chapter 3 "INTEGRATED PERIPHERALS SETUP" section for more detail information.



5. Serial Port COM2 Connector: COM2

This connector support the provided serial port ribbon cabled with mounting bracket, Connect the ribbon cable to this connector and mount the bracket to the case on an open slot.



6. Audio and Game Connector : GAME

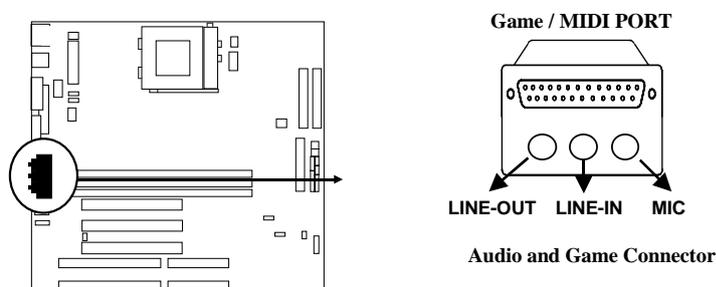
This Connector are 3 phone Jack for LINE-OUT,LINE-IN,MIC and a 15-pin D-Subminiature Receptacle Connector for joystick/MIDI Device.

Line-out : audio output to speaker

Line-in : audio input to sound chip

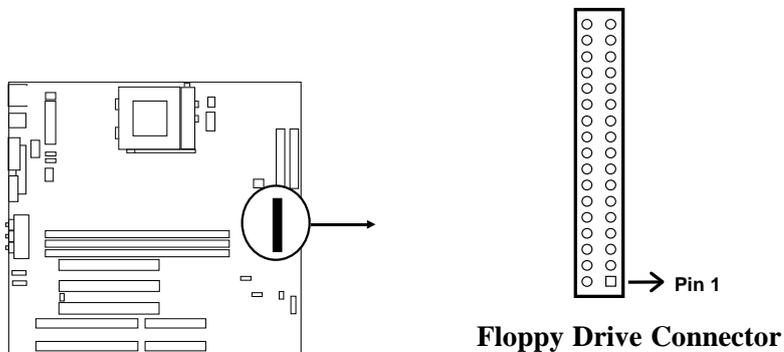
MIC : Microphone Connector

Game/MIDI : for joystick or MIDI Device



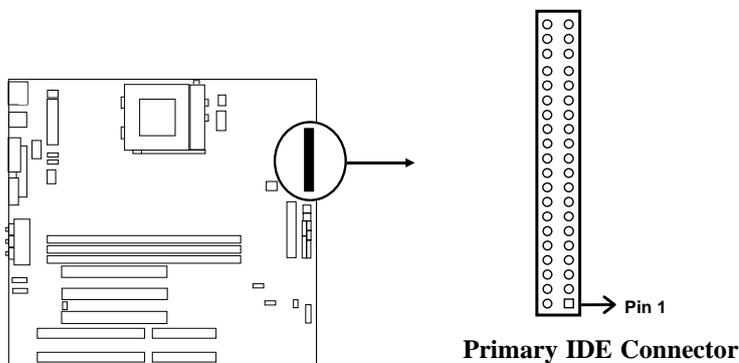
7. Floppy drive Connector (34-pins block): FDD(FLOPPY CONN)

This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.



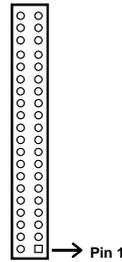
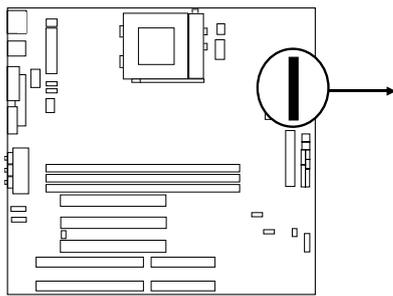
8. Primary IDE Connector (40-pins block): IDE1

This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.



9. Secondary IDE Connector (40-pins block): IDE2

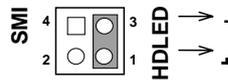
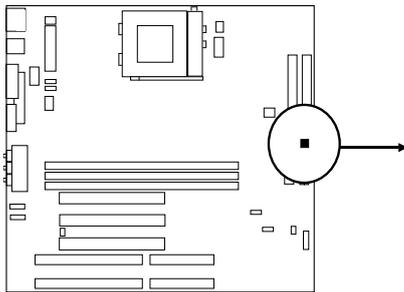
This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.



Secondary IDE Connector

10. IDE activity LED: HDLED (SMI S/W 1&3)

This connector connects to the hard disk activity indicator light on the case.



IDE (Hard Drive) LED

11. Turbo LED switch: TBLED

The motherboard's turbo function is always on. The turbo LED will remain constantly lit while the system power is on. You may wish to connect the Power LED from the system case to this lead. See the figure below.

12. Reset switch lead: RESET

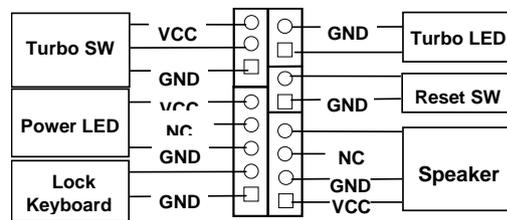
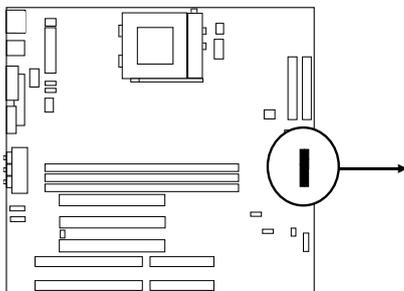
This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.

13. Keyboard lock switch lead: KEYLOCK

This 5-pin connector connects to the case-mounted key switch for locking the keyboard for security purposes. See the figure below.

14. Speaker connector: SPK

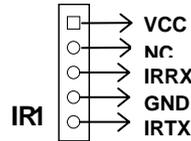
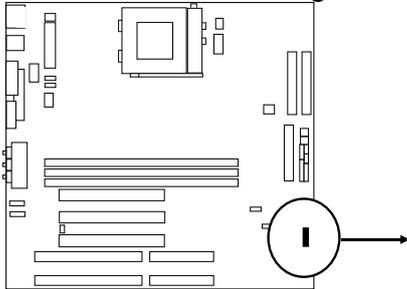
This 4-pins connector connects to the case-mounted speaker. See the figure below.



System Case Connections

15. IR infrared module connector: IR1

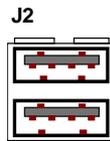
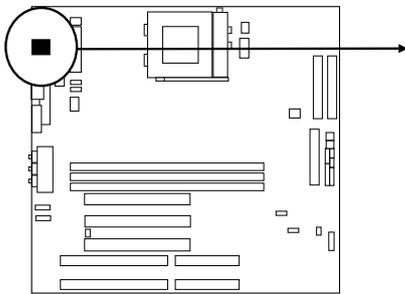
This connector supports the optional wireless transmitting and receiving infrared module. This module mounts to small opening on system cases that support this feature you must also configure the setting through BIOS setup. Use the four pins as shown on the Back View and connect a ribbon cable from the module to the motherboard according to the pin definitions.



Infrared Module Connector

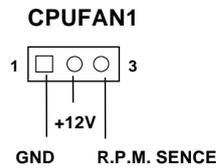
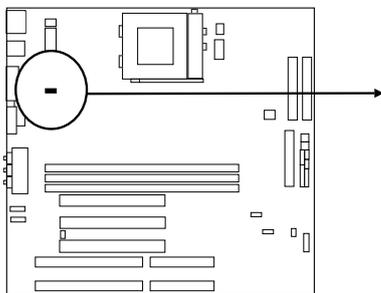
16. USB Port connector: USB

The connectors are 4-pins connector that connect USB devices to the system board.



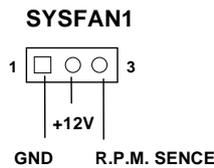
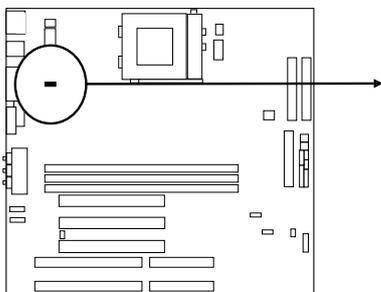
USB Port Connector

17. CPU FAN connector: CPUFAN1



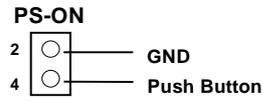
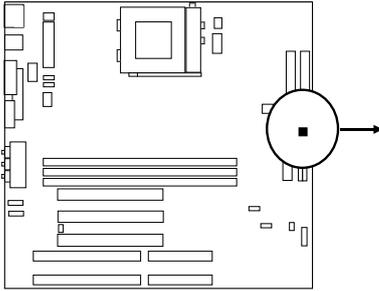
CPU Fan Connector

18. Extra fanning system connectors: SYSFAN1



SYSTEM Fan Connector

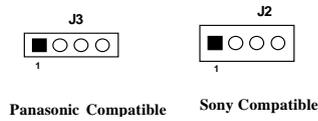
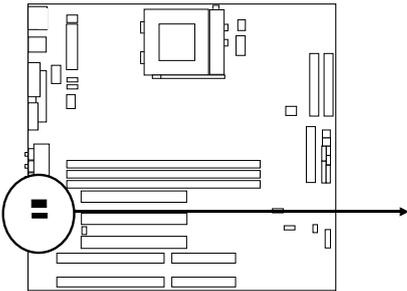
19. Power-On button connector: PS-ON (PWR BTN 2&4)



Power-On button connector

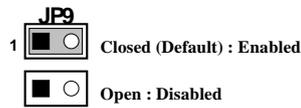
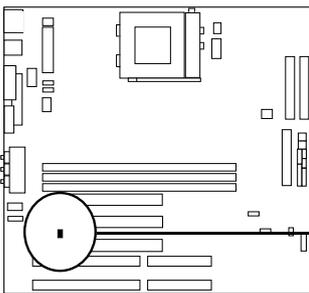
20. CD Audio in connector : J2,J3

These two connectors are design for two type of CD-ROM output cable.

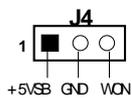
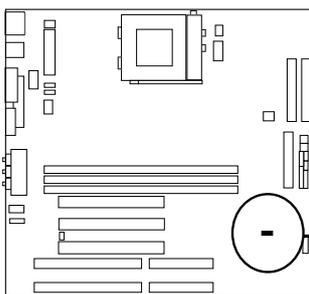


CD-ROM Audio connector

21. On board sound chip Enabled / Disabled connector connector : JP9



22. Wake On Lan connector: J4



Chapter 3

AWARD BIOS SETUP

Award's ROM BIOS provides a built-in Setup program which allows user modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS RAM so data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM stay unchanged unless here is configuration change in the system, such as hard drive replacement or new equipment is installed.

It is possible that CMOS had a battery failure which cause data lose in CMOS_RAM. If so, re_enter system configuration parameters become necessary.

To enter Setup Program

Power on the computer and press **** key immediately will bring you into BIOS **CMOS SETUP UTILITY**.

ROM PCI/ISA BIOS (2A5IMJ1A)
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 BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : QUIT	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

Figure 3-1

The menu displays all the major selection items and allow user to select any one of shown item. The selection is made by moving cursor (press any direction key) to the item and press **<Enter>** key. An on_line help message is displayed at the bottom of the screen as cursor is moving to various items which provides user better understanding of each function. When a selection is made, the menu of selected item will appear so the user can modify associated configuration parameters.

3-1 STANDARD CMOS SETUP

Choose "**STANDARD CMOS SETUP**" in the CMOS SETUP UTILITY Menu (Figure 3-1). The STANDARD CMOS SETUP allows user to configure system setting such as current date and time, type of hard disk drive installed in the system, floppy drive type, and the type of display monitor. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (direction keys to move cursor and <Enter> key to select), the entries in the field will be changed by pressing <PgDn> or <PgUp> keys or user can enter new data directly from the keyboard.

ROM PCI/ISA BIOS (2A51MJ1A)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Fri, Dec, 18 1998									
Time (hh:mm:ss) : 20 : 19 : 7									
<u>HARD DISKS</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTOR</u>	<u>MODE</u>	
Primary Master	: Auto	0	0	0	0	0	0	NORMAL	
Primary Slave	: Auto	0	0	0	0	0	0	NORMAL	
Secondary Master	: Auto	0	0	0	0	0	0	NORMAL	
Secondary Slave	: Auto	0	0	0	0	0	0	NORMAL	
Drive A	: None								Base Memory : 640K
Drive B	: None								Extended Memory : 7168K
									Other Memory : 384K
Video	: EGA/VGA								<hr/>
Halt On	: All Errors								Total Memory : 8192K
Esc	: Quit								↑ ↓ → ← : Select Item
F1	: Help								Pu/Pd/+/- : Modify
									(Shift)F2: Change Color

Figure 3-2

NOTE: *If hard disk Primary Master/Slave and Secondary Master/Slave were used Auto, than the hard disk size and model will be auto-detect on display during POST.*

NOTE: *The "Halt On:" field is to determine when to halt the system by the BIOS is error occurred during POST.*

3-2 BIOS FEATURES SETUP

Select the "BIOS FEATURES SETUP" option in the CMOS SETUP UTILITY menu allows user to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values of this motherboard. Again, user can move the cursor by pressing direction keys and <PgDn> of <PgUp> keys to modify the parameters. Pressing [F1] key to display help message of the selected item.

This setup program also provide 2 convenient ways to load the default parameter data from BIOS [F6] or CMOS [F7] area if shown data is corrupted. This provides the system a capability to recover from any possible error.

ROM PCI/ISA BIOS (2A5IMJ1A)
 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		
Memory Parity Check	: Enabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled		
OS Select For DRAM > 64MB	: Non-OS2		
Report No FDD For WIN 95	: No		
		Esc: Quit	↑ ↓ → ← : Select Item
		F1 : Help	Pu/Pd/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 3-3

Note: The Security Option contains "setup" and "system". The "setup" indicates that the password setting is for CMOS only while the "system" indicates the password setting is for both CMOS and system boot up procedure.

- **Virus Warning:** This category flashes on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem. Default value is Disabled

Enabled: Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.

-
- Disabled:** No warning message to appear when anything attempts to access the boot sector or hard disk partition table.
 - **CPU Internal Cache / External Cache:** These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is Enable. If your CPU without Internal Cache then this item "CPU Internal Cache" will not be show.

Enabled: Enable cachehis category speeds up Power On Self Test. (POST) after you power on the computer.

Disabled: Disable cache
 - **Quick Power On Self Test:** If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled: Enable quick POST

Disabled: Normal POST
 - **Boot Sequence:** This category determines which drive computer searches first for the DOS (Disk Operating System). Default value is A,C,SCSI.

System will first search for floppy disk drive, then hard disk drive and then SCSI device. The options are: 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:** The swap floppy drive. Default value is Disabled.

Enabled: Floppy A & B will be swapped under the DOS

Disabled: Floppy A & B will be not swap
 - **Boot Up Floppy Seek:** During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks. The default value is Enabled.

Enabled: BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.

Disabled: BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.
 - **Boot Up NumLock Status:** The default value is On.

On: Keypad is number keys.

Off: Keypad is arrow keys.
 - **Boot UP System Speed:** It selects the default system speed-the speed that the system will run at immediately after power up.

High: Set the speed to high.

Low: Set the speed to low.

<p>NOTE: The board default value is <i>LOW</i> in the field. Boot the system to controller turbo or De-turbo by Onboard (Turbo Switch).</p>
--

- **Typematic Rate Setting:** This determines the typematic rate.

Enabled: Enable typematic rate and typematic delay programming.

Disabled: Disable typematic rate and typematic delay programming. The system BIOS will use default value of this 2 items and the default is controlled by keyboard.

- **Typematic Rate (Chars/Sec):**

6 : 6 characters per second	8 : 8 characters per second
10 : 10 characters per second	12 : 12 characters per second
15 : 15 characters per second	20 : 20 characters per second
24 : 24 characters per second	30 : 30 characters per second

- **Typematic Delay (Msec):** When holding a key, the time between the first and second character displayed.

250 : 250 msec
500 : 500 msec
750 : 750 msec
1000 : 1000 msec

- **Security Option:** This category allows you to limit access to the system and Setup, or just to Setup. The default value is Setup.

System: The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

Setup: The system will boot, but access to Setup will be denied if the incorrect password is entered at the prompt.

NOTE: *To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **Video BIOS Shadow:** It determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.

Enabled: Video shadow is enabled

Disabled: Video shadow is disabled

- C8000 - CBFFF Shadow:
CC000 - CFFFF Shadow:
D0000 - D3FFF Shadow:
D4000 - D7FFF Shadow:
D8000 - DBFFF Shadow:
DC000 - DFFFF Shadow:

These categories determine whether optional ROM will be copied to RAM by 16K byte or 32K byte per/unit and the size depends on chipset.

Enabled: Optional shadow is enabled.

Disabled: Optional shadow is disabled.

3-3 CHIPSET FEATURES SETUP

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

ROM PCI/ISA BIOS (2A5IMJ1A)
 CHIPSET FEATURES SETUP
 AWARD SOFTWARE ,INC

Auto Configuration	: Enabled	ECC Function Support	: Enabled
Refresh Rate Control	: 15.6us	AGP Aperture Size	: 64MB
Ref/Act Command Delay	: 6T	System BIOS Cacheable	: Enabled
Refresh Queue Depth	: 12	Video BIOS Cacheable	: Enabled
RAS Precharge Time	: 3T	Memory Hole at 15M-16M	: Disabled
RAS to CAS Delay	: 3T	DRAM Controller 1 T WR	: Enabled
ISA Bus clock Frequency	: PCICLK/4	DRAM Controller 1 T RD	: Enabled
Starting Point of Paging	: 1T	PCI Post Write Buffer	: Enabled
NA# Enable	: Enabled	PCI Delayed Transaction	: Disabled
L2 Cache Burst RD Cycle	: Delay 1T	Auto Detect DIMM/PCI Clk	: Enabled
Asyn/Sync Mode CPU/DRAM	: Asynchronous	Spread Spectrum	: Disabled
SDRAM CAS Latency	: 3T		
SDRAM WR Retire Rate	: X-1-1-1		
DRAM Opt RAS Precharge	: Enabled		
PCI Peer Concurrency	: Enabled		
Read Prefetch Memory	: Enabled		
Assert TRDY After Prefet	: 2 QWs	Esc: Quit	↑ ↓ → ←: Select Item
CPU to PCI Burst Mem. WR	: Enabled	F1 : Help	Pu/Pd/+/-:Modify
CPU to PCI Post Write	: Enabled	F5 : Old Values	(Shift)F2 : Color
Linear Mode SRAM Support	: Disabled	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 3-4

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

DRAM Settings: The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

-
-
- **Auto Configuration:** This item allows you select pre-determined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.
The Choice: Enabled, Disabled.
Note: When this item is enabled, the pre-defined items will become SHOW-ONLY.
 - **Refresh Rate Control:** Select the period required to refresh the DRAMs, according to DRAM specifications.
The choice: 3.9us, 7.8us, 15.6us.
 - **Ref / Act Command Delay:** Set the DRAM clock of the refresh command to refresh/active command delay.
The choice: 5T, 6T, 7T, 8T.
 - **Refresh Queue Depth:** Set the depth of refresh queue.
The choice: 0, 4, 8, 12.
 - **RAS Precharge Time:** The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refreshes. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.
The Choice: 2T, 3T, 4T, 5T.
 - **RAS to CAS Delay:** When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe).
The choice: 2T, 3T, 4T, 5T.
 - **ISA Bus Clock Frequency:** You can set the speed of the AT bus at one-third or one-fourth of the CPU clock speed.
The choice: 7.159MHz, PCICLK/3, PCICLK/4.
 - **Starting Point of Paging:** This value controls the start timing of memory paging operations.
The choice: 1T, 2T, 4T, 8T.
 - **NA# Enable:** Selecting *Enabled* permits pipelining, in which the chipset signals the CPU for a new memory address before all data transfers for the current cycle are complete, resulting in faster performance.
The choice: Enabled, Disabled.
 - **L2 Cache Burst RD Cycle:** These timing numbers are the pattern of cycles the CPU uses to read data from the cache.
The choice: Normal, Delay 1T.
 - **Asyn/Sync Mode CPU/DRAM:** This feature can only be enabled when the frequency of CPU clock and the frequency of DRAM clock are the same and the skew between these two clocks should be zero.
The choice: Asynchronous, Synchronous.
 - **SDRAM CAS Latency:** When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.
The choice: 2T, 3T.

-
-
- **SDRAM WR Retire Rate:** The system designer must select the correct timing for data transfers from the write buffer to memory, according to DRAM specifications
The choice: X-1-1-1, X-2-2-2.
 - **DRAM Opt RAS Precharge:** The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refreshes. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.
The choice: Enabled, Disabled.
 - **PCI Peer Concurrency :** Peer concurrency means that more than one PCI device can be active at a time.
The choice: Enabled, Disabled.
 - **Read Prefetch Memory RD :** When this item is *Enabled*, the system is allowed to prefetch the next read instruction and initiate the next process.
The choice: Enabled, Disabled.
 - **Assert TRDY After Prefet :** When you select 1QWs, SiS530 asserts its first TRDY# for 1 transaction after it prefetched 1 quadword of data from system memory. Otherwise, SiS530 asserts its first TRDY# after 2 quadwords are prefetched.
The choice: 1QWs, 2QWs.
 - **CPU to PCI Burst Mem. WR :** Select enabled permits PCI burst memory write cycles, for faster performance. When disabled, performance is slightly slower, but more reliable.
Choices are Enabled, Disabled.
 - **CPU to PCI Post Write :** Select enabled to use a fast buffer for posting writes to memory. Using a fast buffer releases the CPU before completion of a write cycle to DRAM.
The choice: Enabled, Disabled.
 - **Linear Mode SRAM Support :** Select *Enabled* if your system contains a CPU that requires linear mode (e.g., Cyrix M1/M2 CPU).
The choice: Disabled, Enabled.
 - **ECC Function Support :** Enable/Disable the ECC (error-correcting code) function support.
The choice: Enabled, Disabled.
 - **AGP Aperture Size :** Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for APG information.
The choice: 4 MB, 8MB, 16 MB, 32 MB, 64 MB, 128 MB, 256MB.
 - **System BIOS Cacheable :** Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
The choice: Enabled, Disabled.
 - **Video BIOS Cacheable :** Selecting *Enabled* allows caching of the system BIOS ROM at C0000h-F7FFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

- **Memory Hole at 15M-16M** : You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The choice: Enabled, Disabled.

- **DRAM Controller 1 T WR/RD** : Enable/disable DRAM controller one cycle write/read for VUMA function.

The choice: Enabled, Disabled.

- **PCI Post Write Buffer** : Enable/disable PCI post write buffer.

The choice: Enabled, Disabled.

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

The choice: Enabled, Disabled.

3-4 POWER MANAGEMENT SETUP

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ROM PCI/ISA BIOS (2A5IMJ1A)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

ACPI function	: Enabled	VGA Activity	: Enabled
Power Management	: User Define	IRQ [3-7 , 9-15], NMI	: Enabled
Video Off Option	: Susp Stby-> Off	IRQ 8 Brek Suspnd	: Disabled
Video Off Mothod	: V/H SYNC+Blank	Power Button Over Ride	: Instant OFF
Switch Function	: Break/Wake	Ring Power Up Control	: Enabled
Doze Speed (div by)	: 2/8	GPI05 Power Up Control	: Enabled
Stdby Speed(div by)	: 1/8	KB Power ON Password	: Enter
MODEM Use IRQ	: 3	Power Up by Alarm	: Disabled
Hot Key Function As	: Power OFF		
** PM Monitor **			
HDD Off After	: Disable		
Doze Mode	: Disable		
Standby Mode	: Disable		
Suspend Mode	: Disable		
** PM Events **			
HDD Ports Actovoty	: Enabled	Esc: Quit	↑ ↓ → ←: Select Item
COM Ports Actovoty	: Enabled	F1 : Help	Pu/Pd/+/-: Modify
LPT Ports Actovoty	: Enabled	F5 : Old Values (Shift)	F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 3-5

- **Video Off Method** : This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
-------------------	--

Blank Screen	This option only writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

- **Switch Function** : You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period.
- **Doze Speed (div by)**: Sets the CPU's speed during Doze mode. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8
The choice: 1~8.
- **Stdby Speed (div by)** :Select a divisor to reduce the CPU speed during *Standby* mode to a fraction of the full CPU speed. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8-0.
The choice: 1~8
- **MODEM Use IRQ**: Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.
The choice: 3, 4, 5, 7, 9, 10, 11, NA.
- **Hot Key Function As** : Select *Enabled* if your system has a hot key for soft power off.
The choice: Power off, Suspend ,Disabled.
- **PM Timers** : The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.
- **HDD Off After** : By default, this item is Disabled, meaning that no matter the mode the rest of the system, the hard drive will remain ready. Otherwise, you have a range of choices from 1 to 15 minutes or Suspend. This means that you can elect to have your hard disk drive be turned off after a selected number of minutes or when the rest of the system goes into a Suspend mode.
- **Doze Mode** : When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.
- **Standby Mode** : When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.
- **Suspend Mode** : When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.
- **PM Events** : You may disable activity monitoring of some common I/O events and interrupt requests so they do not wake up the system. The default wake-up event is keyboard activity.
- **HDD Ports Activity** : When set to On (default), any event occurring at a HDD (serial) port will awaken a system which has been powered down.
- **COM Ports Activity** : When set to On (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.
- **LPT Ports Activity** : When set to On (default), any event occurring at a LPT (printer) port will awaken a system which has been powered down.
- **VGA Activity** : When set to On (default), any event occurring at VGA will awaken a system which has been powered down.

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When

the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- **IRQ [3-7, 9-15], NMI**
- **IRQ 8 Break Suspend** : You can *Enable* or *Disable* monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.
- **Power Button Over Ride** : You could press the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has “hung.”
The choice: Instant-Off, Delay 4 Sec.
- **Ring Power Up Control** : When you select *Enabled*, a signal from ring returns the system to Full On state.
- **GPIO5 Power Up Control** : When you select *Enabled*, a signal from General Purpose Input 05 returns the system to Full On state.
The choice: Enabled, Disabled.
- **KB Power ON Password** : When you set a password for keyboard, The password you set the keyboard that returns the system to Full On state.
- **Power Up by Alarm** : When you select *Enabled*, the following fields appear. They let you set the alarm that returns the system to Full On state.
The choice: Enabled, Disabled.

3-4-1 The Description of the Power Management

- **Power Management mode selection:**
User Define: This category allows you to select the type (or degree) of power saving and is directly related to the following modes:
 1. HDD Power Down
 2. Doze Mode
 3. Standby Mode
 4. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU'S . Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control APM:

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

If the Max. Power Saving is not enabled, this will be preset to *No*.

MODEM Use IRQ:

This determines the IRQ in which the MODEM can use.

The choices: 3, 4, 5, 7, 9, 10, 11, NA.

Video Off Option:

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the systems enters the Suspend mode.
Susp,Stby --> Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

Video Off Method:

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

• **PM Monitors:**

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

HDD Power Down:

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode:

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode:

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode:

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

• **Standby Events:**

When Enabled, an event occurring on each device listed below restarts the global time for Standby mode.

Primary HDD

Floppy Disk

Serial Port
Keyboard
Parallel Port

- **External Switch:**

This wake-up optional is special for M/B manufacturers' design.

Power Button:

This item allows you to select the function of power button.

The choice: Disabled, Green Mode, Power Off.

DOCK I/O SMI:

This item allows you to enable or disable the function of DOCK I/O SMI.

The choice: Enabled, Disabled.

3-4-2 Description of the Green Functions

This motherboard supports HDD Power Down, Doze and standby power saving functions when Intel Pentium processor CPU is installed. The detail description of these functions are provided as following:

HDD Standby Mode

When system stop reading or writing HDD, the timer starts to count. The system will cut off the HDD power when timer ran out of time. The system will not resume operation until either a read from or a write to HDD command is executed again.

Doze Mode

The system hardware will drop down CPU clock from normal working speed when Doze mode timeout occurred.

Standby Mode

When the system standby mode timer ran out, it will enter the standby mode and retain CPU at slow working speed. The screen will be blanked out.

Suspend Mode

When the system suspend timer time out, the system will enter the suspend mode and the chipset will stop CPU clock immediately. The power consumption in Suspend Mode is lower than in standby mode. The screen is also blanked out.

PM Events:

AWARD BIOS defines 15 PM Events in the power management mode (Doze, standby & suspend). The user can initial any PM Events to be "Enable" or "Disable". When the system detects all of the enabled events do not have any activity, it will start the system Doze timer first if the "Power Management" isn't "Disabled". Once the system Doze timer timed out, it will process doze power saving procedure by starting the system standby timer. When the standby timer ran out and all of the "Enabled" events remains silent, the system will enter the standby mode. By now, the system will not only process the standby power saving procedures but also start the system suspend timer. When the suspend timer time out, all of the CPU clock will be stopped by dropping system clock down to zero and remains this way until any one of the "Enabled" event occurred.

- **Power Button Over Ride:** User can choice power off method, by instant off or 4 sec off.
- **Ring Power Up Control:** When setting this item Enabled, and press the power button to power off. After Ring in the system will auto power on.
- **Power Up by Alarm:** Default value is Disabled , when choice enabled you can setting Date of Month, Time Alarm to setup the time and the date to power on the computer.

3-5 PNP/PCI CONFIGURATION SETUP

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

ROM PCI/ISA BIOS (2A51MJ1A)
 PNP/PCI CONFIGURATION SETUP
 AWARD SOFTWARE, INC.

Resources Controlled By : Manual Reset Configuration Data: Disabled	PCI IRQ Activated By : Level
IRQ-3 assigned to : PCI/ISA PnP IRQ-4 assigned to : PCI/ISA PnP IRQ-5 assigned to : PCI/ISA PnP 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 : PCI/ISA PnP DMA-3 assigned to : PCI/ISA PnP DMA-5 assigned to : PCI/ISA PnP DMA-6 assigned to : PCI/ISA PnP DMA-7 assigned to : PCI/ISA PnP	Esc: Quit ↑ ↓ → ←: Select Item F1 : Help Pu/Pd/+/-:Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

Figure 3-6

- Resource 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.
 The choice: Auto, Manual.
- Reset Configuration Data:**
 Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.
 The choice: Enabled, Disabled .
- IRQ3/4/5/9/10/11/12/13/15:**
 When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:
 Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
 The choice: Legacy ISA, PCI/ISA PnP.
- DMA0/1/3/5/6/7 assigned to:**

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:
 Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
 The choice: Legacy ISA, PCI/ISA PnP.

- **PCI IRQ Activated by:**

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.
 The choice: Level, Edge.

- **PCI IDE IRQ Map to:**

This allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA (Industry Standard Architecture) device rather than a PCI controller. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B,C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in "Slot x Using INT#" above.

Selecting "PCI Auto" allows the system to automatically determine how your IDE disk system is configured.

3-6 LOAD BIOS DEFAULTS

The "LOAD BIOS DEFAULTS" function loads the system default data directly from ROM and initialize associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

ROM PCI/ISA BIOS (2A5IMJ1A)
 CMOS SETUP UTILITY
 AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT	ACTION
PNP/PCI CONFIGURATION	FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
<div style="border: 1px solid black; padding: 5px; display: inline-block;">Load BIOS Default (Y/N)? Y</div>	
Esc : QUIT	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

Figure 3-7

onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In *Auto* mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

- **Primary/Secondary Master/Slave UDMA:** UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select *Auto* in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

- **IDE Burst Mode:** Selecting *Enabled* reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to *Disabled*. This field does not appear when the Internal PCI/IDE field, above, is *Disabled*.

The choice: Enabled, Disabled.

- **IDE Data Port Post Write :** Selecting *Enabled* speeds up processing of drive reads and writes, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to *Disabled*

The choice: Enabled, Disabled.

- **IDE HDD Block Mode :** The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface IDE interface.

Enabled	Secondary HDD controller used
Disabled	Secondary HDD controller not used.

- **Onboard FDD Controller:** This should be enabled if your system has a floppy disk drive (FDD) installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

The choice: Enabled, Disabled

- **Onboard Serial Port 1 / Port 2:** This item allows you to determine access onboard serial port 1 / port 2 controller with which I/O address.

The Choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

- **UART 2 Mode:** The second serial port offers these InfraRed interface modes.

Choices are Standard, ASKIR, HPSIR.

- **IR Function Duplex:** This item allows you to select the IR function when you select the UART2 Mode is ASKIR.

Choices are Half, Full.

- **RxD, TxD Active :** This item allows you to determine the active of RxD, TxD.

Choices are "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".

- **Onboard Parallel Port:** This item allows you to determine access onboard parallel port controller with which I/O address.

The choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

- **Onboard Parallel Mode:** Select an operating mode for the onboard parallel (printer) port. Select *SPP* unless you are certain your hardware and software both support one of the other available modes.

-
- The choice: SPP,EPP,ECP,ECP+E PP.
 - **ECP Mode Use DMA:** Select a DMA channel for the parallel port for use during ECP mode.
The choice: 3, 1.
 - **Parallel Port EPP Type:** This item allows you to determine the IR transfer mode of onboard I/O chip.
Choice are EPP1.9,EPP1.7.
 - **PS/2 mouse function:** If your system has a PS/2 mouse port and you install a serial pointing device,select *Disabled*.
The choice: Enabled, Disabled.
 - **USB Controller:** Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.
The choice: Enabled, Disabled.
 - **Init Display First:** This item allows you to decide to active which bus first(PCI Slot or AGP first).
The choice: PCI Slot , AGP .
 - **Current CPU Temperature:** This field displays the current CPU temperature , if your computer contains a monitoring system .
 - **Current System Temperature :** This field displays the current system temperature, if your computer contains a monitoring system.
 - **Current CPUFAN 1/SYSFAN 1 Speed:** These fields display the current speed of up to two CPU fans,if your computer contains a monitoring system.
 - **12Volt,5Volt Vcc,Vcore:** These fields display the current voltage of up to seven voltage input lines,if your computer contains a monitoring system.

3-9 SUPERVISOR/USER PASSWORD

This item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program (Refer to Figure 3-3 for the details). Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose either Supervisor Password or User Password in the Main Menu and press <Enter>. The following message appears:

"Enter Password:"
2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters. For no password just press <Enter>.
3. After you enter the password, the following message appears prompting you to confirm the password:

"Confirm Password:"
4. Enter exact the same password you just typed again to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password you entered before, choose the Supervisor Password and Press <Enter>. It will delete the password that you had before.
7. Move the cursor to Save & Exit Setup to save the option you did, otherwise the old password will still be there when you turn on your machine next time.

3-10 IDE HDD AUTO DETECTION

The "IDE HDD AUTO DETECTION" utility is a very useful tool especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type and install in the system automatically. Also you can set HARD DISK TYPE to "Auto" in the STANDARD CMOS SETUP to have same result. The BIOS will Auto-detect the hard disk size and model on display during POST.

ROM PCI/ISA BIOS (2A51MJ1A)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Thu, Mar, 12 1998								
Time (hh:mm:ss) : 13 : 43 : 56								
<u>HARD DISKS</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTOR</u>	<u>MODE</u>
Primary Master	:							
Primary Slave	:							
Secondary Master	:							
Select Secondary Slave Option (N=Skip):N								
<u>OPTIONS</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTOR</u>	<u>MODE</u>	
1 (Y)	0	0	0	0	0	0	NORMAL	
Esc : Quit		↑ ↓ → ← : Select Item			Pu/Pd/+/- : Modify			
F1 : Help		(Shift)F2: Change Color						

Figure 3-10

NOTE: HDD Modes

The Award BIOS supports 3 HDD modes : **NORMAL, LBA & LARGE**

NORMAL mode

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for NORMAL mode are 1024, 16 & 63.

	no. Cylinder	(1024)
x	no. Head	(16)
x	no. Sector	(63)
<u>x</u>	<u>no. per sector</u>	<u>(512)</u>
	528 Megabytes	

If user set this HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that!

LBA (Logical Block Addressing) mode

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 Gigabytes which is obtained by the following formula:

$$\begin{array}{r} \text{no. Cylinder} \quad (1024) \\ \times \text{ no. Head} \quad (255) \\ \times \text{ no. Sector} \quad (63) \\ \hline \times \text{ bytes per sector} \quad (512) \\ \hline 8.4 \text{ Gigabytes} \end{array}$$

LARGE mode

Extended HDD access mode supported by Award Software.

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The Award BIOS provides another alternative to support these kinds of LARGE mode:

<u>CYLS.</u>	<u>HEAD</u>	<u>SECTOR</u>	<u>MODE</u>
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. Reverse transformation process will be made inside INT 12h in order to access the right HDD address the right HDD address!

Maximum HDD size:

$$\begin{array}{r} \text{no. Cylinder} \quad (1024) \\ \times \text{ no. Head} \quad (32) \\ \times \text{ no. Sector} \quad (63) \\ \hline \times \text{ bytes per sector} \quad (512) \\ \hline 1 \text{ Gigabytes} \end{array}$$

NOTE:

To support LBA or LARGE mode of HDDs, there must be some softwares involved. All these softwares are located in the Award HDD Service Routine (INT 13h). It may be failed to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h.

UNIX operating systems do not support either LBA or LARGE and must set to the Standard mode. UNIX can support drives larger than 528MB.

3-11 SAVE & EXIT SETUP

The "SAVE & EXIT SETUP" option will bring you back to boot up procedure with all the changes you just made which are recorded in the CMOS RAM.

3-12 EXIT WITHOUT SAVING

The "EXIT WITHOUT SAVING" option will bring you back to normal boot up procedure without saving any data into CMOS RAM. All of the old data in the CMOS will not be destroyed.

3-13 I/O & MEMORY MAP

MEMORY MAP

Address Range	Size	Description
00000-7FFFF	512K	Conventional memory
80000-9FBFF	127K	Extended Conventional memory
9FC00-9FFFF	1K	Extended BIOS data area if PS/2 mouse is installed
A0000-C7FFF	160K	Available for Hi DOS memory
C8000-DFFFF	96K	Available for Hi DOS memory and adapter ROMs
E0000-EEFFF	60K	Available for UMB
EF000-EFFFF	4K	Video service routine for Monochrome & CGA adapter
F0000-F7FFF	32K	BIOS CMOS setup utility
F8000-FCFFF	20K	BIOS runtime service routine (2)
FD000-FDFFF	4K	Plug and Play ESCD data area
FE000-FFFFF	8K	BIOS runtime service routine (1)

I/O MAP

000-01F	DMA controller (Master)
020-021	INTERRUPT CONTROLLER (Master)
022-023	CHIPSET control registers. I/O ports
040-05F	TIMER control registers
060-06F	KEYBOARD interface controller (8042)
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	INTERRUPT controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	MATH COPROCESSOR
1F0-1F8	HARD DISK controller
278-27F	PARALLEL port 2
2B0-2DF	GRAPHICS adapter controller
2F8-2FF	SERIAL port 2
360-36F	NETWORK ports
378-37F	PARALLEL port 1
3B0-3BF	MONOCHROME & PARALLEL port adapter
3C0-3CF	EGA adapter
3D0-CDF	CGA adapter
3F0-3F7	FLOPPY DISK controller
3F8-3FF	SERIAL port-1

3-14 TIME & DMA CHANNELS MAP

TIME MAP: TIMER Channel 0 System timer interrupt

TIMER Channel 1 DRAM REFRESH request
TIMER Channel 2 SPEAKER tone generator

DMA CHANNELS: DMA Channel 0 Available
DMA Channel 1 Onboard ECP (Option)
DMA Channel 2 FLOPPY DISK (SMC CHIP)
DMA Channel 3 Onboard ECP (Default)
DMA Channel 4 Cascade for DMA controller 1
DMA Channel 5 Available
DMA Channel 6 Available
DMA Channel 7 Available

3-15 INTERRUPT MAP

NMI: Parity check error

IRQ (H/W): 0 System TIMER interrupt from TIMER 0
1 KEYBOARD output buffer full
2 Cascade for IRQ 8-15
3 SERIAL port 2
4 SERIAL port 1
5 PARALLEL port 2
6 FLOPPY DISK (SMC CHIP)
7 PARALLEL port 1
8 RTC clock
9 Available
10 Available
11 Available
12 PS/2 Mouse
13 MATH coprocessor
14 Onboard HARD DISK (IDE1) channel
15 Onboard HARD DISK (IDE2) channel

3-16 RTC & CMOS RAM MAP

RTC & CMOS: 00 Seconds
01 Second alarm
02 Minutes
03 Minutes alarm
04 Hours
05 Hours alarm
06 Day of week
07 Day of month
08 Month
09 Year
0A Status register A
0B Status register B
0C Status register C
0D Status register D
0E Diagnostic status byte

- 0F Shutdown byte
- 10 FLOPPY DISK drive type byte
- 11 Reserve
- 12 HARD DISK type byte
- 13 Reserve
- 14 Equipment type
- 15 Base memory low byte
- 16 Base memory high byte
- 17 Extension memory low byte
- 18 Extension memory high byte
- 19-2d
- 2E-2F
- 30 Reserved for extension memory low byte
- 31 Reserved for extension memory high byte
- 32 DATE CENTURY byte
- 33 INFORMATION FLAG
- 34-3F Reserve
- 40-7F Reserved for CHIPSET SETTING DATA

3-17 BIOS REFERENCE-POST CODES

ISA PORT codes are typically output to port address 80h.

Post	Name	Description
CO	Turn Off Chipset Cache	OEM Specific-Cache controller.
1	Processor Test 1	Processor Status (1 FLAGS) Verification. Tests the following processor status flags carry, zero, sign, overflow. The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off.
2	Processor Test 2	Read/ Write/ Verify all CPU registers except SS, SP, and BP with data pattern FF and OO.
3	Initialize Chips	Disable NMI, PIE, AIE, UEI, SOWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers, CMOS shutdown byte. Initialize timer 0, 1, and 2, including set EISA timer to a known state. Initialize DMA Controllers 0 and 1. Initialize interrupt controllers 0 and 1. Initialize EISA extended registers.
4	Test Memory Refresh Toggle	RAM must be periodically refreshed in order to keep the memory from decaying. This function assures that the memory refresh function is working properly.
5	Blank video, Initialize keyboard	Keyboard controller initialization.

6	Reserved	
7	Test CMOS Interface and Battery Status	Verifies CMOS is working correctly, detects bad battery.
BE	Chipset Default Initialization	Program chipset registers with power on BIOS defaults.
C1	Memory presence test	OEM Specific-Test to size on-board memory.
C5	Early Shadow	OEM Specific-Early Shadow enable for fast boot.
C6	Cache presence test	External cache size detection.
8	Setup low memory	Early chip set initialization. Memory presence test. OEM chip set routines. Clear low 64K of memory. Test first 64K memory.
9	Early Cache Initialization	Cyrix CPU initialization. Cache initialization.
A	Setup Interrupt Vector Table	Initialization first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL
B	Test CMOS RAM Checksum	Test CMOS RAM Checksum, if bad, or insert key pressed, load defaults.
C	Initialize keyboard	Detect type of keyboard controller (optional) Set NUM_LOCK status.
D	Initialize Video Interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter.
E	Test Video Memory	Test video memory, write sign-on message to screen. Setup shadow RAM.Enable shadow according to Setup.
F	Test DMA Controller 0	BIOS checksum test. Keyboard detect and initialization.
10	Test DMA Controller 1	
11	Test DMA Page Registers	Test DMA Page Registers.
12-13	Reserved	
14	Test Timer Counter 2	Test 8254 Timer 0 Counter 2.

15	Test 8259-1 Mask Bits	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
16	Test 8259-2 Mask Bits	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
17	Test Stuck 8259's Interrupt Bits	Turn off interrupts then verify no interrupt mask register is on.

18	Test 8259 Interrupt Functionality	Force an interrupt and verify the interrupt occurred.
19	Test Stuck NMI Bits (Parity I/O Check)	Verify NMI can be cleared.
1A		Display CPU clock.
1B-1E	Reserved	
1F	Set EISA Mode	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests and clear EISA mode flag. Test EISA Configuration Memory Integrity (checksum & communication interface).
20	Enable Slot 0	Initialization slot 0 (System Board).
21-2F	Enable Slot 1-15	Initialize slot 1 through 15.
30	Size Base and Extended Memory	Size base memory from 256K to 640K and extended memory above 1MB.
31	Test Base and Extended Memory	Test base memory from 256K to 640K and extended memory above 1MB using various patterns. NOTE: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
32	Test EISA Extended Memory	If EISA Mode flag is set then test EISA memory found in slots initialization. NOTE: This will be skipped in ISA mode and can be "skipped" with ESC key in EISA mode.
33-3B	Reserved	
3C	Setup Enabled	
3D	Initialize & install Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup Cache Controller	Initialize cache controller.
3F	Reserved	
BF	Chipset Initialization	Program chipset registers with Setup values
40		Display virus protest disable or enable.
41	Initialize Floppy Drive & Controller	Initialize floppy disk drive controller and drives.
42	Initialize Hard Drive & controller	Initialize hard drive controller and any drives.
43	Detect & Initialize Serial/Parallel Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	
45	Detect & Initialize Math Coprocessor	Initialize math coprocessor.
46	Reserved	
47	Reserved	
48-4D	Reserved	

4E	Manufacturing POST Loop or Display Messages	Reboot if Manufacturing POST Loop pin is set. Otherwise display any messages (i.e., any non-fatal errors that were detected during POST) and enter Setup.
4F	Security Check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM and clear screen.
51	Pre-boot Enable	Enable parity checker. Enable NMI, Enable cache before boot.
52	Initialize Option ROMs	Initialize any option ROMs present from C8000h to EFFFFh. NOTE: When FSCAN option is enabled, will initialize from C8000h to F7FFFh.
53	Initialize Time Value	Initialize time value in 40h:BIOS area.
60	Setup Virus Protect	Setup virus protect according to Setup.
61	Set Boot Speed	Set system speed for boot.
62	Setup Num Lock	Setup Num Lock status according to Setup.
63	Boot Attempt	Set low stack. Boot via INT 19h.
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display. Press F1 to disable NMI, F2 reboot.
E1-EF	Setup Pages	E1-Page 1, E2-Page 2, etc.
FF	Boot	

Chapter 4

Software Installed

4-1 Sound Card Driver Quick Installation:

Windows 95 OSR2 Driver Installation

- step1: Before install sound driver please double-click "My Computer" icon, "Control Panel" icon, "System" icon, "Device Manager" icon
- step2: check "Other device" item, if there have "PCI Multimedia Audio Device", please remove it first.
- step3: In "Control Panel" icon choose "Add new hardware" to add hardware in Win95.
- step4: Choose "No" don't let Windows to search for new hardware, and select hardware type "Sound, Video and game controllers".
- step5: Follow the step choose "Have Disk", "Browse", to change the Folders to X:\ESSOLO-1\95-98DRV.
- step6: Select "OK" to finish install procedure.
- step7: Restart system.

Windows NT4.0 Installation

- step1: Double click "My Computer", "Control Panel", "Multimedia"
- step2: Choose "Review" item and "Add" item, double – click "Unlisted or Update Driver" item.
- step3: Double- click "Browes" to change the Folders to X:\ESSOLO-1\WNT4.0
- step4: Choose "OK" to finish install procedure.
- step5: Restart System.

Audio Rack Quick Installation

In Windows95 OSR2, Windows98, WindowsNT4.0 excute "setup" in X:\ESSOLO-1\ESSRACK\SETUP

Windows98 Driver Installation

- step1: Before install sound card driver please double-click "My Computer" icon, "Control Panel" icon, "System" icon, and Choose "Device Manager" item.
- step2: Check "Other Device" item, if there have " PCI Multimedia Audio Device " please remove it first.
- step3: In "Control Panel" icon, choose "Add New Hardware" icon, and choose "Next", the windows will show " PCI Multimedia Audio Device", click "Next" and choose "Display a list of all Drivers", select "Sound, Video and game controllers" item.
- step4: Choose "Have Disk", "Browse" and chang the Folders to "X:\ESSOLO-1\95-98DRV.
- step5: Select "OK" to Finish install.
- step6: When Windows98 ask "Are all your drivers installed now" Please select "Yes" and click "Next", "Finish" .
- step7: Restart System.

JOYSTICK Installation

In Windows95 OSR2, Windows98, double-click "My Computer", "Game controllers", select "Properties" item, "Cailibrate" to adjust your joystick before using it.

4-2 Display Card Driver Quick Installation

WINDOWS 95/98 Display Driver Quick Installation

Step 1. Before Install the driver please view the "readme" file.

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- Step 2. Run "X:\SiS530\VGA\WIN9X\SETUP.EXE"
(if your CD-ROM is X drive)
- Step 3. Follow the setup procedure install your VGA Driver.

WINDOWS NT4.0 Display Driver Quick Installation

- Step 1. Boot from Windows NT4.0, Double-click "My computer" icon, "Control panel" icon, "Display" icon
- Step 2. When the "Display properties" window appear, choose "setting" tab, select "Display type"
- Step 3. When the "Display type" window appear, Select "Change"
- Step 4. When the "Change Display" window appear, select "Have Disk", Change the directory path from "A:\\" to " X:\SiS530\VGA\WinNT40 ", select "OK". (if your CD-ROM is D driver)
- Step 5. When the "Display type" window appear again, select "CLOSE".
- Step 6. When the "Display properties" window appear again, select "CLOSE"
- Step 7. Restart Windows NT40
- Step 8. When the "Display properties" window appear, setup your resolution, select "test", select "OK", you will be finished your installation

SOFTWARE MPEG XING 3.30

(Only use for Windows 95/98)

- step 1. Run Windows 95, Change your directory path to D:\xing\xing330
(if your CD-ROM is D driver)
- step 2. Run "setup" according the process to complete installation,
select talk bar "Start", "Program", "XingMpeg play", play MPEG file or
Video CD

4-3 PC HEALTH MONITOR Driver Quick Installation

§In Windows 95/ Windows 98/ Windows NT4.0

- step1: Run "X:\SiS530\HEALTH\SETUP.EXE" file .
- step2: Selet "Next" to complete install driver.
- step3: The program will automatic install driver to system if users have
question in system Hardware Monitor Setting, please read "HELP"
Section in program.