5S530
AT Form Factor
Main Board
User's Manual

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Warning and disclaimer

This manual is designed to provide information about the Pentium® system board. Every effort has been made to make this manual as accurate as possible, but no warranty or fitness is implied. All the information is provided on an 'as is' basis. The author and his corresponding publishing company shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this manual or from the use of the system board that accompanies it.

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Chapter 1 Introduction

1-1 5S530 Main Board Overview

5S530 is designed based on SIS P5 A.G.P./ VGA chipset, "SIS 530 & SIS5595," which provides a high-performance/cost index desktop solution for the Intel® Pentium® P54C/P55C. AMD® K5/K6/K6-2/K6-III, Cyrix® M1/6x86L/MX/MII/, and other compatible Pentium® processors with 3D A.G.P. VGA system. The integrated H/W 3D VGA controller adopts 64-bit 100MHz host bus speed and shares 2MB, 4MB, or 8MB from frame buffer memory with system which improves the performance eminently.

5S530 especially adopts ESS SOLO-1™ PCI AudioDrive® with a single chip PCI audio solution, providing high-quality audio processing while maintaining full legacy DOS game compatibilty. With a dynamic range over 80dB, the SOLO-1 complies with the Microsoft® PC97/PC98 specifications and meets WHQL audio requirements. The SOLO-1 incorporates a microprocessor, ESFM™ music synthesizer, 3D stereo processor, 16-bit stereo wave ADC and DAC, 16-bit stereo music DAC, MPU-401 UART mode serial port, dual game port, H/W master volume control, a serial port interface to external wavetable music synthesizer, DMA control logic with FIFO, and PCI bus interface logic. There are three stereo inputs (typically line-in, CD audio and auxiliary) and a mono microphone input. The SOLO-1 can record, compress, and play back voice, sound and music built-in mixer controls.

5S530 also implements high performance I/O Controller utilizes with fully Plug and Play device which supports 2.88 MB Floppy, Dual 16550 Compatible (with 16 bytes FIFO, up to 460K baud rate) Serial Port, ECP (Enhanced Capabilities Port), EPP (Enhanced Parallel Port) parallel port, Infrared IrDA (HPSIR), and Amplitude Shift Keyed IR. (ASKIR) port.

5S530 supports four 32-bit PCI & two 16-bit ISA for highest performance I/O add-on adapter cards. The system board supports 4 PCI bus-mastering slots (PCI 2.2 compliant) and allows synchronous CPU and PCI bus clock frequency. **5S530** is also strengthened with Power Management Wake up events like **"Modem ring on,"** which are the new inventions to enable PCs to be turned on over the network or modem. These are also key benefits in PC operation, new system setup and power conservation.

In conclusion, **5S530** is a combination of the highest in performance, flexibilility, efficiency, and ease of use that meets a variety of price/performance levels. **5S530** is an ideal platform for the increasing requirements of today's and future's desktop application.

1-2 Specifications

- **PCB board size:** 22 cm x 24 cm
- **PCB layer:** 4 layers
- **ZIF Socket 7**
  Support Intel® Pentium, Cyrix 6x86 series/ MII series, AMD K5/K6/K6-2 CPUs and other Pentium® compatible processors.

   *CPU is not enclosed in the package*

- **Chipset :** SIS530 & SIS5595
- **Memory DIMMs**
  - ! 3 of 168-pin double-sided DIMMs
  - ! Maxmium up to 1.5 GB
  - ! 3.3V SDRAM only

   *Chipset ONLY SUPPORTS SDRAM; EDO RAM not supported.*

   *Since VGA shares memory from DIMM1, DIMM1 MUST be installed with SDRAM module .*

   *With 95/100 MHz CPUs like K6-2, the system MUST be installed with PC-100 100 MHz SDRAM module.*

- **Expansion Slot :** 2x ISA slots, 4x PCI slots (1 shared slot)
- **Cache:** 512K, maximum up to 1MB

- Audio/Sound Function
  Onboard ESS SOLO-1™ PCI sound chip
  - ! Microsoft® PC97/PC98 compliant
  - ! Meet WHQL audio requirement

- **Video/Graphics functions**
  - ! Shared system memory area 2MB, 4MB, or 8MB
  - ! 24-bit true color

User MUST use the onboard VGA function which is unable to be disabled. Other graphic cards are not acceptable.

- **BIOS:** flash ROM BIOS
  Award® full **PnP** (Plug & Play) BIOS

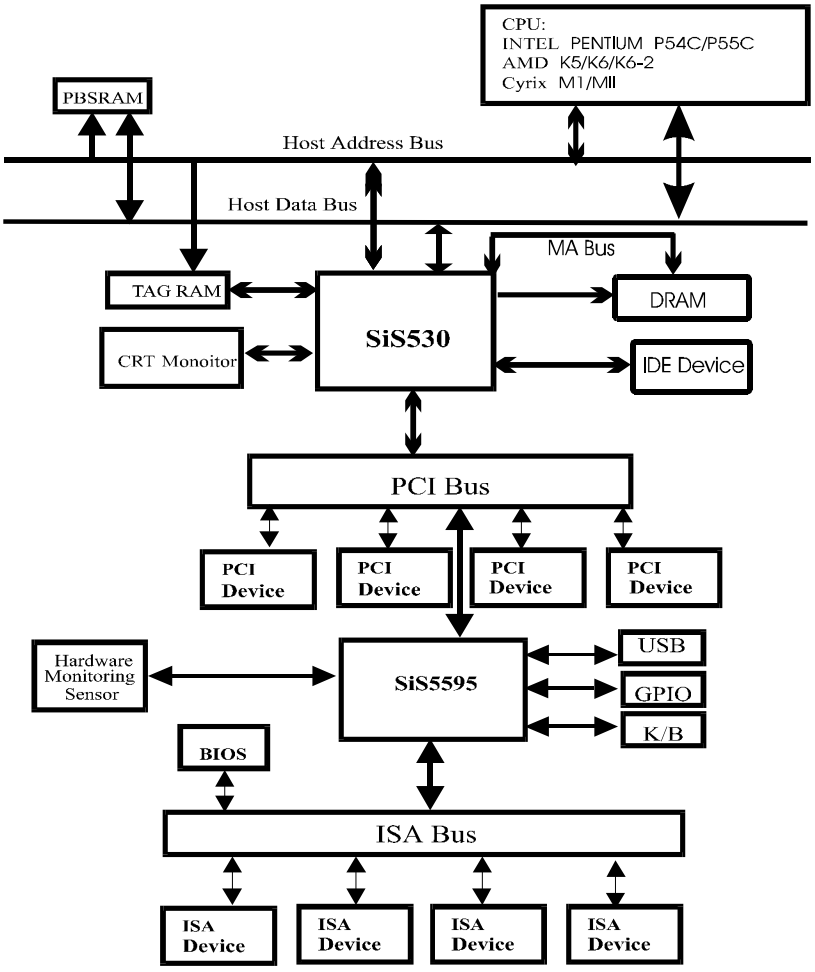
- **I/O function**
  - **!** 2 x PCI IDE devices
  - **!** 1 x FDC, 2 x serial ports(16550 fast COM.)
  - **!** 1x parallel port device /EPP/ECP/SPP
  - **!** 2x USB connector
  - **!** IrDA (infrared) connector

- **AT form factor:** AT/ATX power supply optional

- **Green function:** Complied with APM (Advanced Power Management)

- **Special features**
  - **!** Modem ring on (ATX power supply required)
  - **!** Windows 95 power off (ATX power supply required)
  - **!** Keyboard wake up

1-3 System Block Diagram



1-4 Notice of Hardware Installation

Before hardware installation, make sure you have checked the following things.

A. Check the package
If any of these items is missing or damaged, contact the dealer from whom you purchase. Leave this main board in its original package until you are ready to install it. In the package, there are:

- 5S530 main board
- manual
- cables (for LINE-IN, LINE-OUT, MIC, GAME, VGA, IDE, FDC, RS232, PS/2)
- driver & utility / CD

B. Make sure power is off.
During hardware installation, be sure there is no power connected at this period.

C. Avoid ESD (Electrical Static Discharge).
While working with **5S530**, wear a grounded wristband or ankle strap to avoid ESD (Electrical Static Discharge).

1-5 Notice of CD Driver Installation

This CD contains all drivers for 5S530 mainboard.

CD driver is always updated with the latest version, so the actual CD content may have some difference with the above picture.

1-6 XStore Pro IDE Driver

Lucky Star has integrated High Point's new-invented software technology, **"XStore Pro,"** to our valued customers as a free service. Developing the technique of "read ahead caching after seeking," **XStore Pro** increases hard disk performance. More concretely, when working with hard disk of large block sizes, it effectively enhances hard disk performance up to 50%, and system performance up to 10%.

System requirement
Under the below environments, the driver will perform its best in your system. No extra computer components are required.

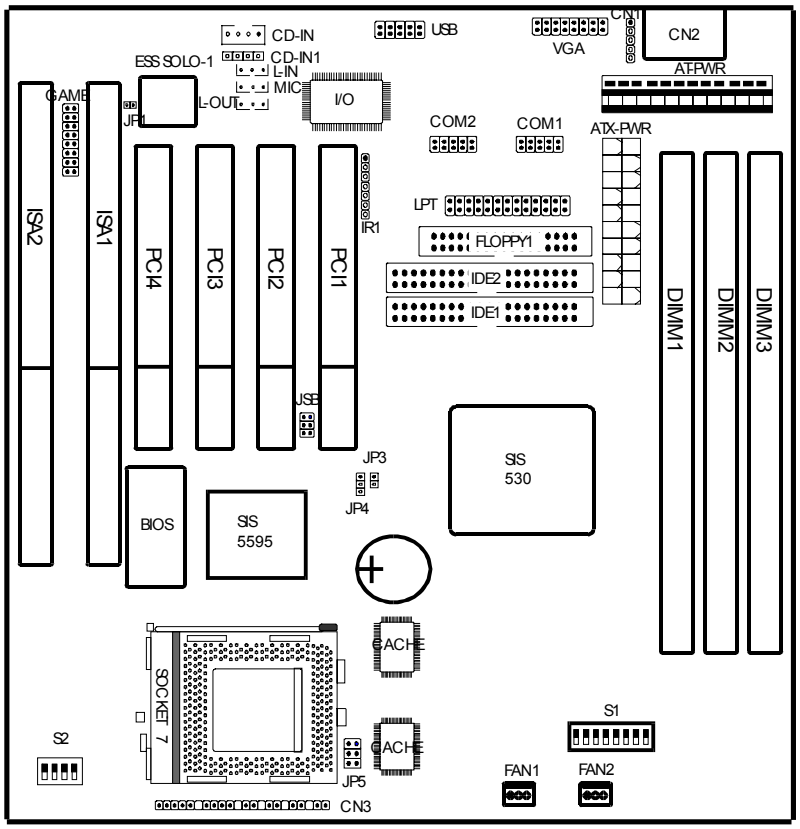
- Windows 95 or Windows 98 environment
- Lucky Star main boards
- Recommended system memory: 32 MB or above

Website to bundle updated XStore Pro IDE driver
The enclosed CD has integrated XStore Pro IDE driver. Updated drivers will be constantly provided at High Point's website. Lucky Star website is also linked to High Point.

- http://www.lucky-star.com.tw
- http://highpoint-tech.com

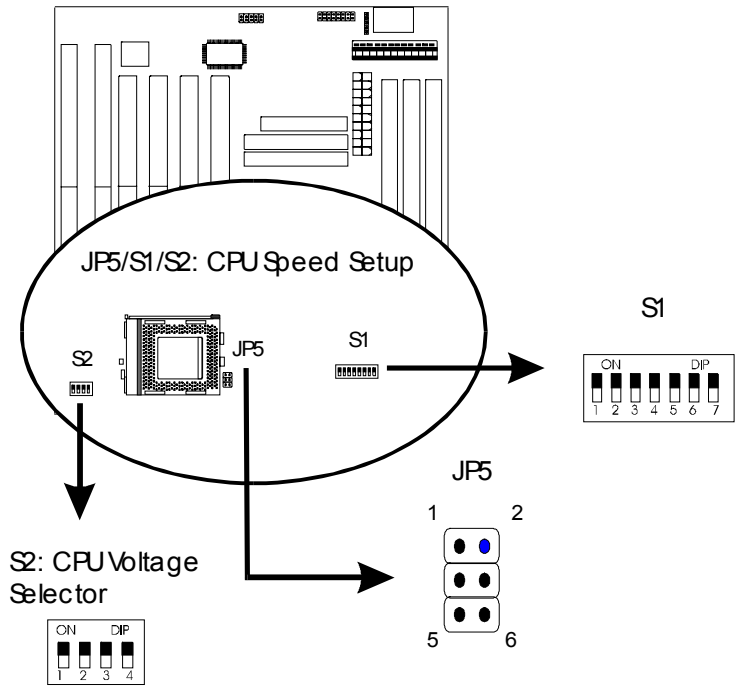
Chapter 2 Installation

2-1 Layout Reference



2-2 Quick Reference to CPU Speed Setup

The setup of CPU speed is designed to a DIP switch form. This helps the users to set CPU speed. 5S530 supports Intel® P54C/P55C, AMD® K5/K6/K6-2, Cyrix® M1/6x86L/MX/MII/, IDT® Pentium® processors.



CPU Speed Setup

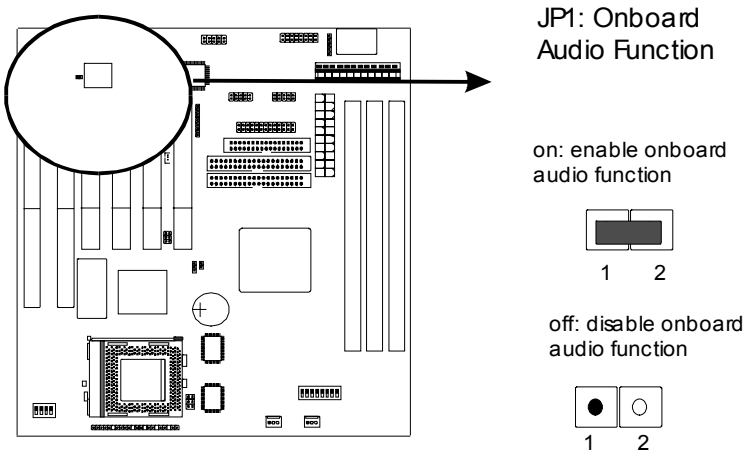
Intel® Pentium® CPU	SYS. Clock	CPU Voltage	CPU Ratio	JP5	S1							S2			
					1	2	3	4	5	6	7	1	2	3	4
P54C 100 MHz	66 MHz	3.3V	1.5X	Off	Off	Off	Off	On	On	On	Off	On	Off	On	On
P54C 133 MHz	66 MHz	3.3V	2X	Off	On	Off	Off	On	On	On	Off	On	Off	On	On
P54C 166 MHz	66 MHz	3.3V	2.5X	Off	On	On	Off	On	On	On	Off	On	Off	On	On
P55C 166 MHz	66 MHz	2.8/3.3V	2.5X	Off	On	On	Off	On	On	On	Off	Off	Off	Off	On
P54C 200 MHz	66 MHz	3.3V	3X	Off	Off	On	Off	On	On	On	Off	On	Off	On	On
P55C 200 MHz	66 MHz	2.8/3.3V	3X	Off	Off	On	Off	On	On	On	Off	Off	Off	Off	On
P55C 233 MHz	66 MHz	2.8/3.3V	3.5X	Off	Off	Off	Off	On	On	On	Off	Off	Off	Off	On
Cyrix® CPU	**SYS. Clock**	**CPU Voltage**	**CPU Ratio**	**JP5**	**S1**							**S2**			
					1	2	3	4	5	6	7	1	2	3	4
166+ M1	66 MHz	3.52V	2X	Off	On	Off	Off	On	On	On	Off	On	On	On	On
6X86L 166 MHz	66 MHz	2.8/3.3V	2X	Off	On	Off	Off	On	On	On	Off	Off	Off	Off	On
6X86L 200 MHz	75 MHz	2.8/3.3V	2X	Off	On	Off	Off	Off	On	On	Off	Off	Off	Off	On
6X86MX 166 MHz	66 MHz	2.9/3.3V	2X	Off	On	Off	Off	On	On	On	Off	On	Off	Off	On
6X86MX 200 MHz	75 MHz	2.9/3.3V	2X	Off	On	Off	Off	Off	On	On	Off	On	Off	Off	On
6X86MX 233 MHz	75 MHz	2.9/3.3V	2.5X	Off	On	On	Off	Off	On	On	Off	On	Off	Off	On
6X86MX 266 MHz	83 MHz	2.7/3.3V	2.5X	Off	On	On	Off	On	Off	On	Off	On	On	On	Off
6X86MII 300 MHz	66 MHz	2.9/3.3V	3.5X	Off	Off	Off	Off	On	On	On	Off	On	Off	Off	On
6X86MII 333 MHz	83 MHz	2.9/3.3V	3X	Off	Off	On	Off	On	Off	On	Off	On	Off	Off	On
6X86MII 366 MHz	100MHz	2.9/3.3V	2.5	Off	On	On	Off	On	On	Off	Off	On	Off	Off	On
AMD® CPU	**SYS. Clock**	**CPU Voltage**	**CPU Ratio**	**JP5**	**S1**							**S2**			
					1	2	3	4	5	6	7	1	2	3	4
K5-PR100/PR133	66 MHz	3.52V	1.5X	Off	Off	Off	Off	On	On	On	Off	On	On	On	On
K6-PR166	66 MHz	2.9/3.3V	2.5X	Off	On	On	Off	On	On	On	Off	On	Off	Off	On
K6-PR200	66 MHz	2.9/3.3V	3X	Off	Off	On	Off	On	On	On	Off	On	Off	Off	On
K6-PR233	66 MHz	3.2/3.3V	3.5X	Off	Off	Off	Off	On	On	On	Off	Off	Off	On	On
K6-PR233	66 MHz	3.3/3.3V	3.5X	Off	Off	Off	Off	On	On	On	Off	On	Off	On	On
K6-PR266	66 MHz	2.2/3.3V	4X	Off	On	Off	On	On	On	On	Off	Off	On	Off	Off
K6-PR300	66 MHz	2.2/3.45V	4.5X	1-2,3-4,5-6	On	On	On	On	On	On	Off	Off	On	Off	Off
K6-2 266	66 MHz	2.2/3.3V	4X	Off	On	Off	On	On	On	On	Off	Off	On	Off	Off
K6-2 300	66 MHz	2.2/3.3V	4.5X	Off	On	On	On	On	On	On	Off	Off	On	Off	Off
K6-2 300	100MHz	2.2/3.3V	3X	Off	Off	On	Off	On	On	Off	Off	Off	On	Off	Off
K6-2 333	66 MHz	2.2/3.3V	5X	Off	Off	On	On	On	On	On	Off	Off	On	Off	Off
K6-2 333	95 MHz	2.2/3.3V	3.5X	Off	Off	Off	Off	Off	Off	On	Off	Off	On	Off	Off
K6-2 350	100MHz	2.2/3.3V	3.5X	Off	Off	Off	Off	On	On	Off	Off	Off	On	Off	Off
K6-2 366	66 MHz	2.2/3.3V	5.5X	Off	Off	Off	On	On	On	On	Off	Off	On	Off	Off
K6-2 380	95 MHz	2.2/3.3V	4X	Off	On	Off	On	Off	Off	On	Off	Off	On	Off	Off
K6-2 400	100MHz	2.2/3.3V	4X	Off	On	Off	On	On	On	Off	Off	Off	On	Off	Off
K6-2-450	100MHz	2.4/3.3V	4.5X	Off	On	On	On	On	On	Off	Off	Off	Off	On	Off
K6-III-400	100MHz	2.4/3.3V	4X	Off	On	Off	On	On	On	Off	Off	Off	On	Off	Off
K6-III-450	100MHz	2.4/3.3V	4.5X	Off	On	On	On	On	On	Off	Off	Off	Off	On	Off

2-3 Jumper Settings

There are 6 jumpers on this main board. Different setups have different functions. The following pages will tell how to set the jumpers under different circumstances.

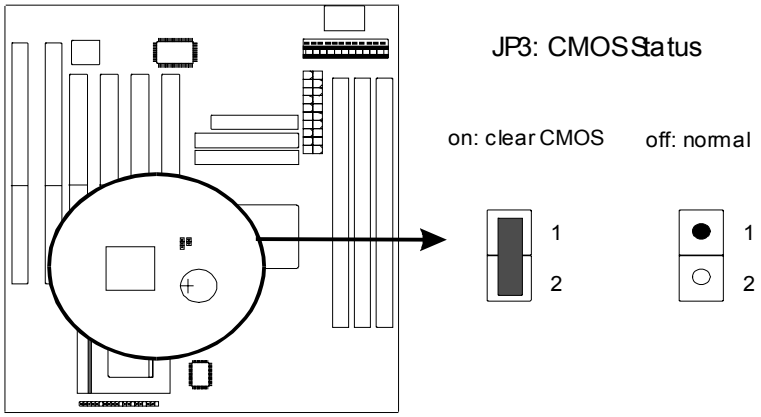
2-3-1 JP1: Audio Function Selector

JP1 is a 2-pin audio function selector. 5S530 has ESS SOLO-1 onboard. User can disable this function and use his own sound cards by setting JP1 to "off" status. Set "on" to enable the system onboard audio function.



2-3-2 JP3: CMOS Status

JP3 is a 2-pin connector. Clear CMOS if system password is forgotten. Please set to "on" to clear CMOS and "off" to normal status. Below is details to show how to clear CMOS.



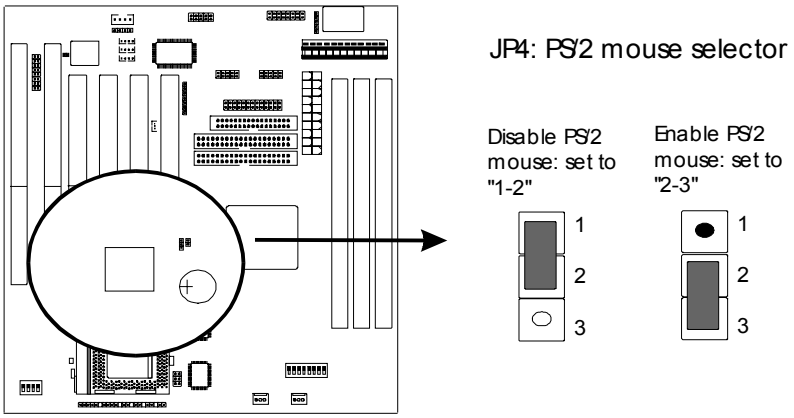
Procedure to clear CMOS:

Step 1: Shut down the system and disconnect the power supply from AC power.
Step 2: If the system uses AT/ATX power, pull out the AT/ATX cable from power connector.
Step 3: Short the CMOS jumper by putting jumper cap on Pin 1-2 for a few seconds.
Step 4: Set JP3 to "off" to return normal setup.
Setp 5: Link power cable to the connector & connect AC power to power supply.
Step 6: Turn on system power.

if you'd like to set password, press "Del" Key during system bootup to enter CMOS setup and establish a new password.

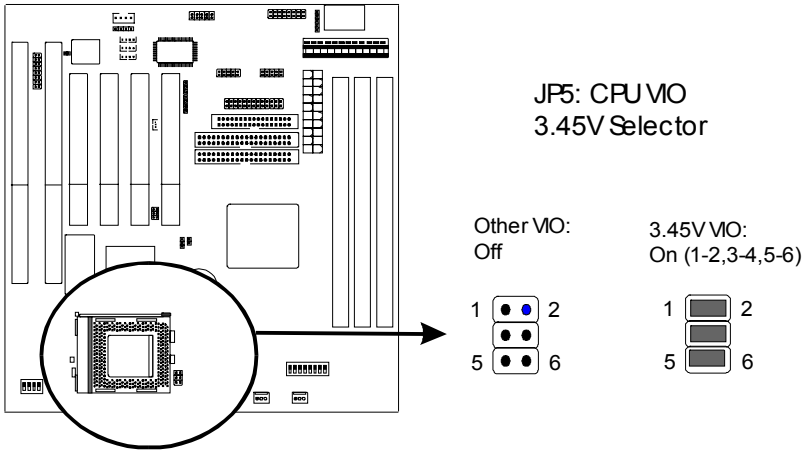
2-3-3 JP4: PS/2 Mouse Selector

JP4 is a 3-pin jumper providing PS/2 mouse function. Set “2-3” if the system uses P/S2 mouse, and “1-2” without PS/2 mouse.



2-3-4 JP5: CPU VIO 3.45V Selector

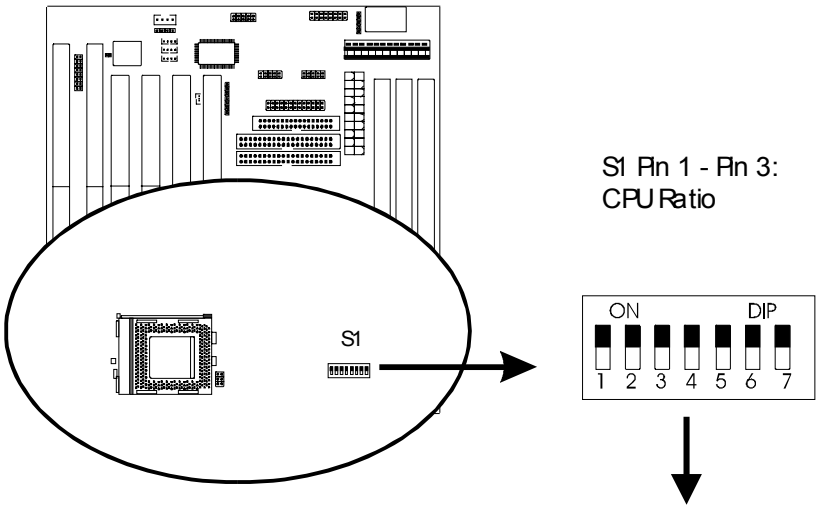
JP5 is a 6-pin selector to choose CPU with 3.45V VIO, such as AMD® K6-PR300 2.2/3.45V. Set to "1-2,3-4,5-6" for 3.45V VIO, and "off" for other VIOs.



Currently only IDT® C6 CPUs are single voltages; others are almost dual voltages.

2-3-5 S1 Pin 1 – Pin3: CPU Ratio Selector

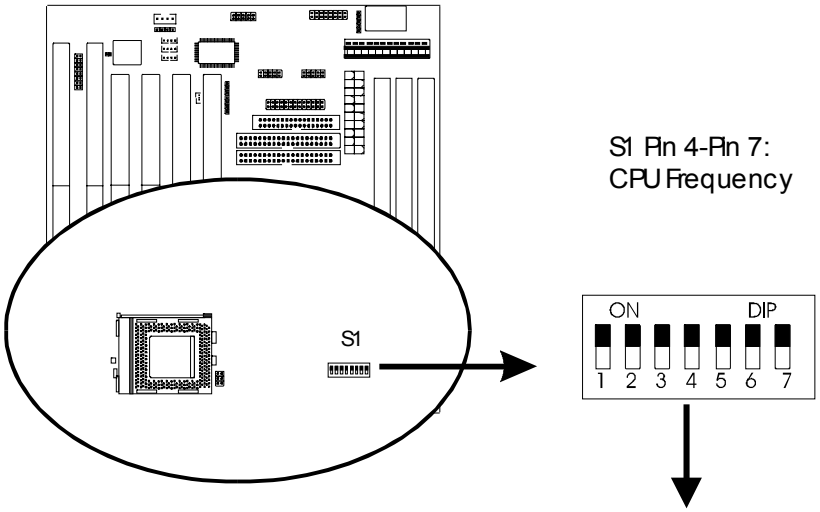
S1 is a 7-pin DIP switch, and Pin1 to Pin3 is the CPU ratio selector. Please select the right ratio according to your CPU and set as below.



S1: Pin 1-3			CPU Ratio
1	**2**	**3**	
off	Off	off	1.5x/3.5x
on	Off	off	2.0x
on	on	off	2.5x
off	on	off	3.0x
on	off	on	4.0x
on	on	on	4.5x
off	on	on	5.0x
off	off	on	5.5x

2-3-6 S1 Pin 4- Pin7: CPU Frequency Selector

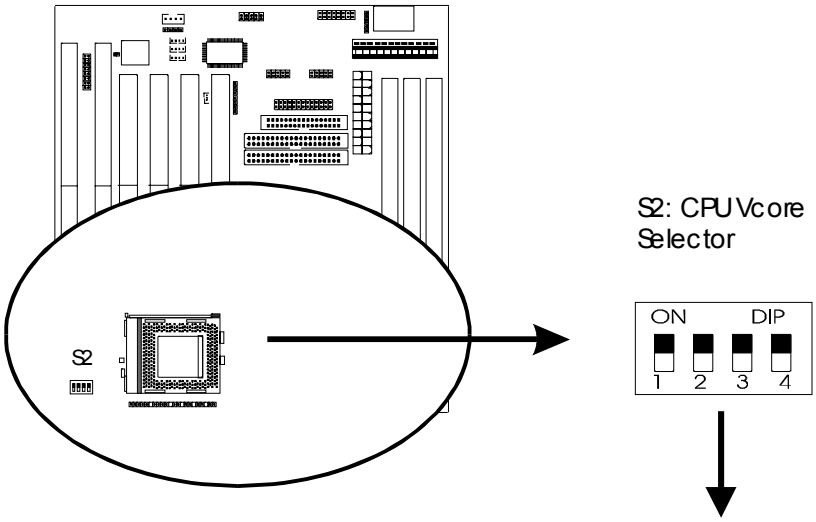
S1 is a 7-pin DIP switch, and Pin 4- Pin7 is the CPU frequency selector. Select the right frequency according to your CPU, and see details as below.



S1: Pin 4-7				CPU Freq.	SDRAM
4	**5**	**6**	**7**		
on	on	On	off	66.8 MHz	66.8 MHz
off	on	On	off	75 MHz	75 MHz
on	off	on	off	83.3 MHz	83.3 MHz
on	on	on	on	90 MHz	90 MHz
off	off	on	off	95 MHz	95 MHz
on	on	off	off	100 MHz	100 MHz

2-3-7 S2: CPU Vcore Selector

S2 is a 4-pin DIP switch to select CPU Vcore. Please select the right CPU Vcore according to your CPU and set as below.



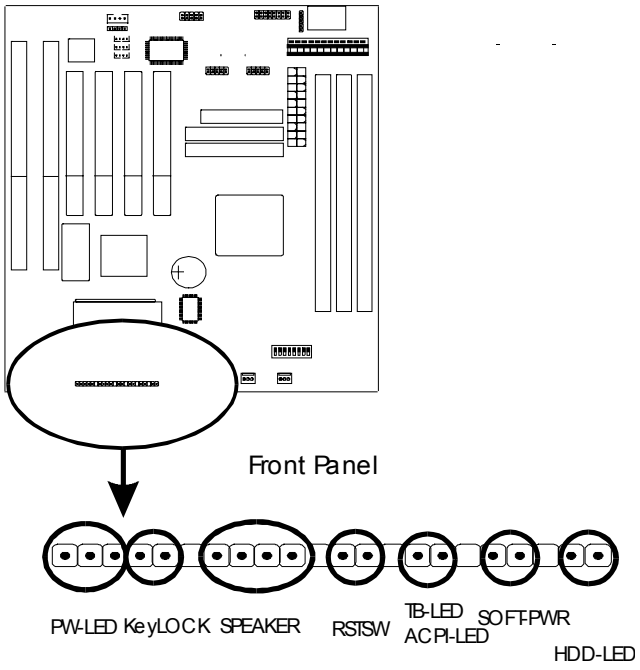
S2				CPU Vcore
1	2	3	4	
on	off	off	off	2.1V
off	on	off	off	2.2V
on	on	on	off	2.7V
off	off	off	on	2.8V
on	off	off	on	2.9V
off	off	on	on	3.2V
on	off	on	on	3.3V
on	on	on	on	3.5V

2-4 Connectors

There are many connectors on this main board. Refer to the following pages for details.

2-4-1 Front Panel Connectors

Front panel has connectors as "PW-LED," "KEYLOCK," "SPEAKER," "RSTSW," "TB-LED/ACPI," and "SOFT-PWR," and "HDD-LED." Refer to details as below.



PW- LED is a 3-pin connector. It is used to connect to the LED on the case front panel. The LED shows the status of the power.

KEYLOCK is a 2-pin connector. It is used to connect the key lock on the case front panel (if there is). Keyboard may be disconnected with the system through this function. Set to "on" to disconnect the connector with the system and "off" for normal status.

SPEAKER is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the main board for sound purpose.

RSTSW is a 2 -pin keyed Berg strip, connected to the push button reset switch on the case's front panel. Shorting both pin 1& pin 2 can reset the system, which is similar to the power off and then on again.

ACPI-LED /TB-LED with a 2 pins is used to connect to the ACPI-LED or Turbo LED on the front panel of the case (if there is). ACPI function only works for ATX power supply.

SOFT-PWR is ATX Soft-PWR with 2 pins. SOFT-PWR is for ATX power supply only.

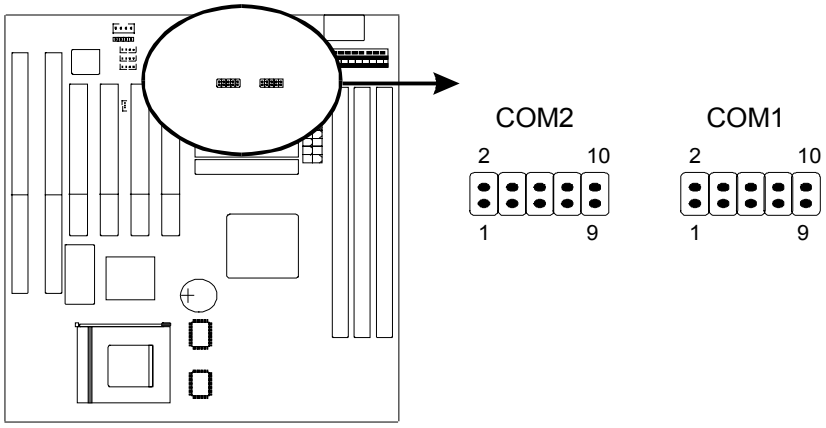
HDD-LED (Hard Disk activity LED connector) is a 2-pin keyed Berg strip. It is used to connect to front panel Hard Disk LED.

2-4-2 Back Panel Connectors

There are COM1/ COM2, LPT, USB and AT keyboard, PS/2 mouse on case back panel. Please refer to more details as below.

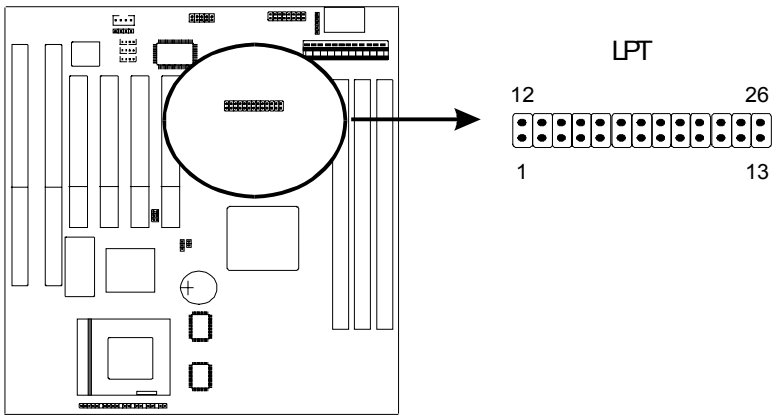
COM1/COM2

The onboard serial port 1 and port 2 are the 9-pin D-subminature male connector **COM1 and COM2.** COM1 and COM2 can be disabled in BIOS setup. Please refer to Chapter 3 "Integrated Peripherals" for more information.



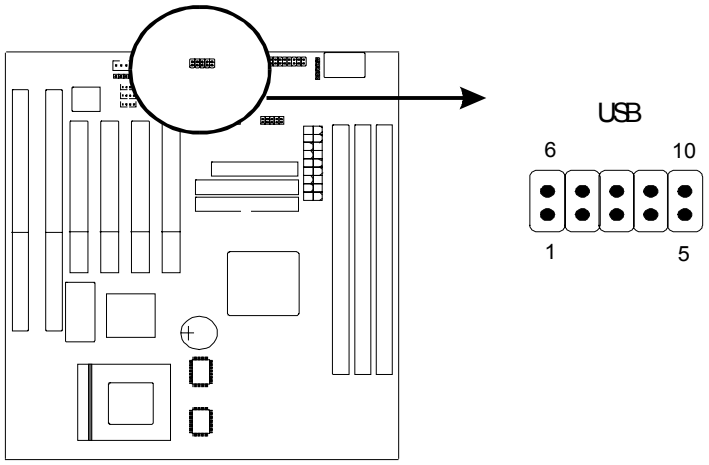
LPT

The onboard parallel port is a 25-pin female connector, marked as **"LPT."**



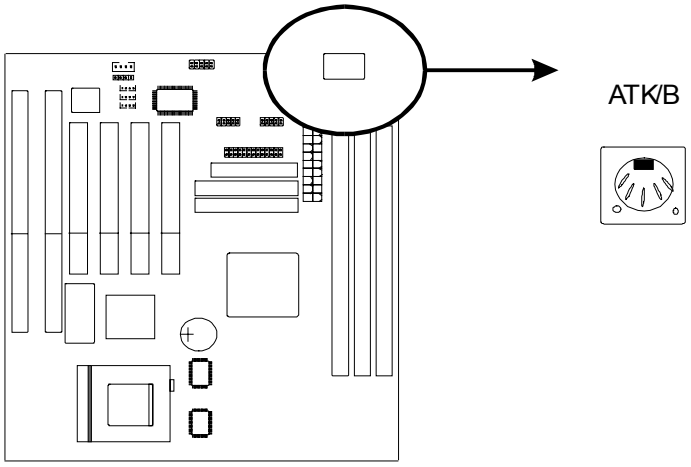
USB (Universal Serial Bus)

Universal Serial Bus connector, marked **"USB,"** is used to connect USB devices. There are 2 USB connectors on this main board.



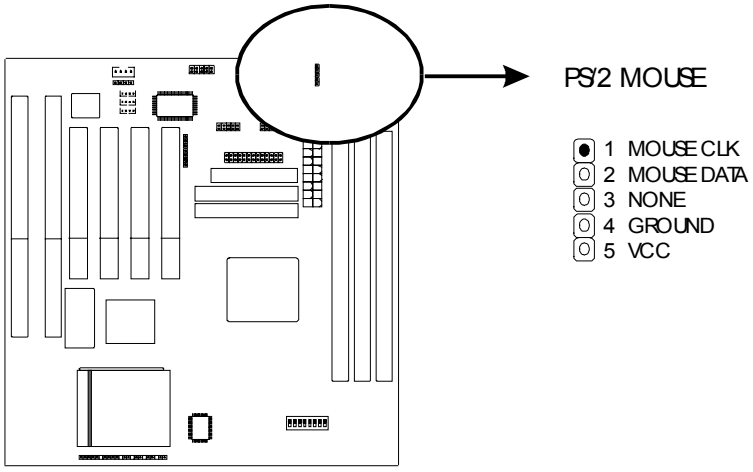
AT Keyboard

AT keyboard is a 5-pin connector.



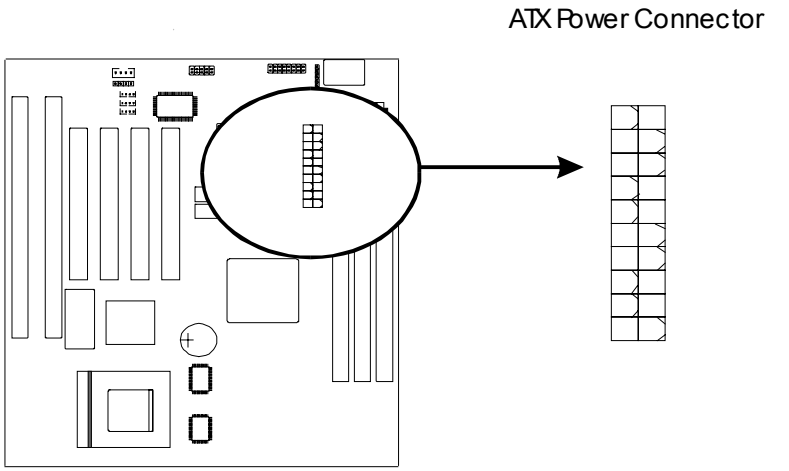
PS/2 Mouse

PS/2 Mouse is a 5-pin connector to connect to mouse connector.



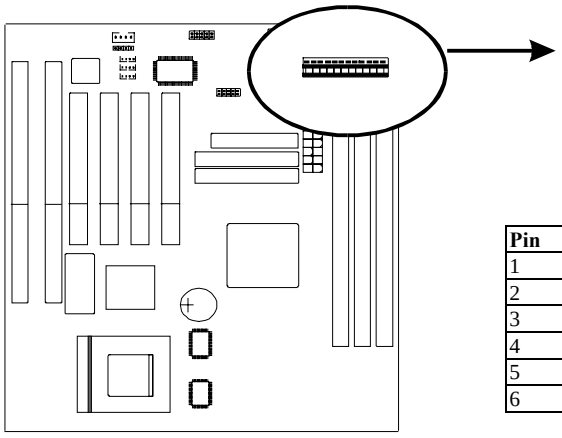
2-4-3 ATX Power Supply Connector

5S530 supports standard AT and ATX power supply. ***ATX power supply connector*** has 20 pins, which is designed for ATX case especially. The ATX power supply supports the function of the **"Soft Power On Momentary switch"** which connects on the front panel switch to the 2-pin **SOFT-PWR** on the system board**.** While the power switch on the back of ATX power is turned on, the full power will not go into the system board until the front panel switch is momentarily pressed. Push the switch again to turn off the power to the system board.

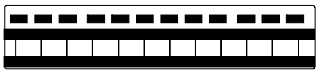


2-4-4 AT Power Supply Connector

5S530 supports standard AT and ATX power supply. AT Power supply has 12 pins.



ATPower Connector

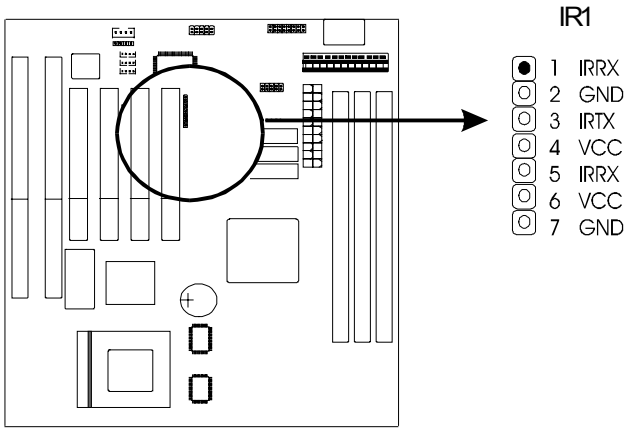


Pin	Signal	Pin	Signal
1	POWER GOOD	7	GROUND
2	+5V DC	8	GROUND
3	+12V DC	9	-5V DC
4	-12V	10	+5V DC
5	GROUND	11	+5V DC
6	GROUND	12	+5V DC

2-4-5 IR1 Connector

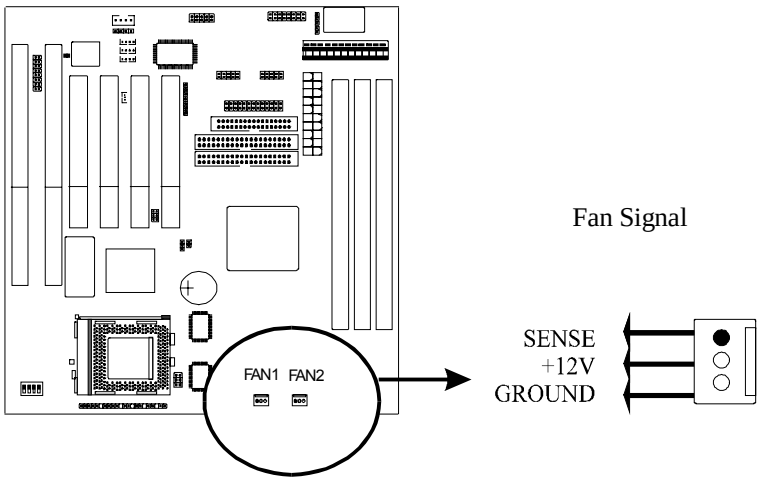
IR1 connector supports wireless infrared module. With this module and application software like LAPlink, or WIN95 Direct Cable Connection, user can transfer data to or from laptops, notebooks, PDA and printers. This connector supports **HPSIR**, **ASKIR,** and **Fast IR**.

Attach Infrared module to IR connector and enable BIOS "Infrared function." Be sure to put in the right orientation during attachment.



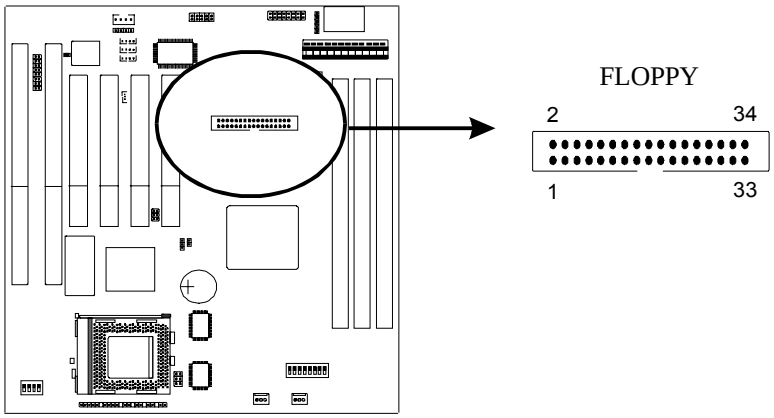
2-4-6 CPU FAN1 & FAN2 Connectors

CPU fan is a 3-pin connector, and 5S530 supports 2 FAN connectors. As 5S530 supports hardware monitoring, the system can detect fan speed automatically. The user may refer to Chapter 3 “3-7 Integrated Peripherals” to see the CPU fan speed.



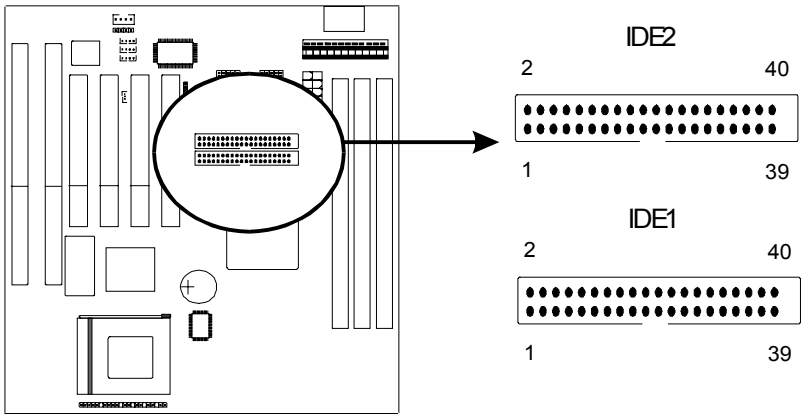
2-4-7 FLOPPY1

FLOPPY1 has 34 pins and is used to attach the floppy drive cable.



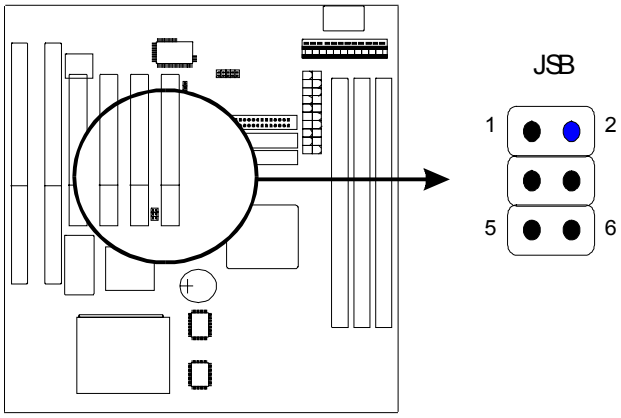
2-4-8 IDE 1 and IDE2

5S530 supports 2 IDE connectors: IDE 1 and IDE2. IDE connectors have 40 pins. IDE1 is the primary channel, and IDE2 is the secondary. Each channel supports 2 IDE devices, and 4 channels in total for this main board.



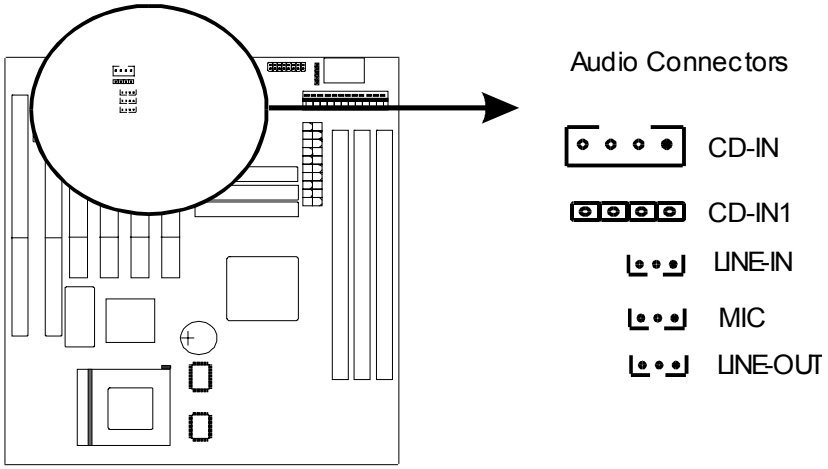
2-4-9 JSB: SB LINK

JSB is so called “SB-Link” used to attach the “PC-PCI” standard sound card like Creative AWE64D or Yamaha XG… for compatibility under DOS mode.



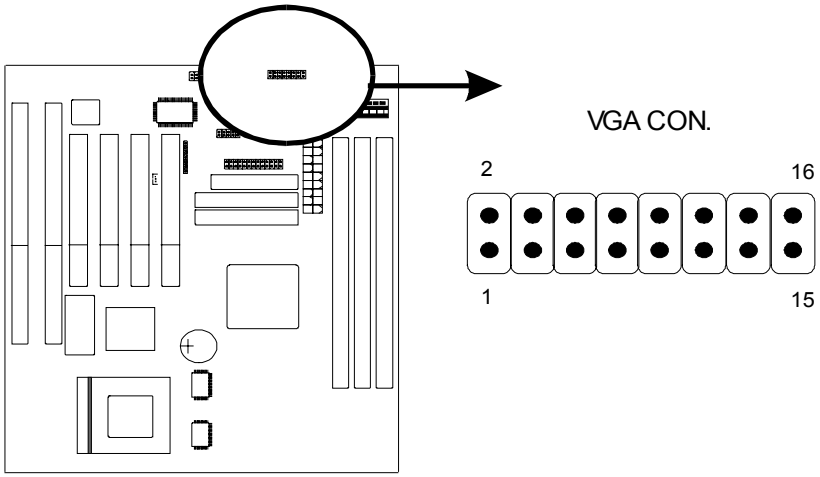
2-4-10 Audio Connectors

The audio connectors include CD-IN, CD-IN1, MIC, LINE-IN, and LINE-OUT. In the package, there is a cable for game, MIC, Line-in, Line- out, connect the following MIC, LINE-OUT, LINE-IN to the cable.



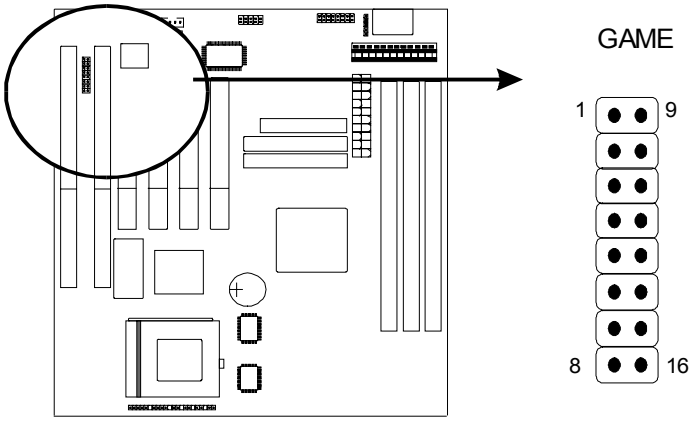
2-4-11 VGA Connector

VGA connector is a 16-pin connector providing video functions. In the package, there is a back panel VGA cable connecting to this connector.



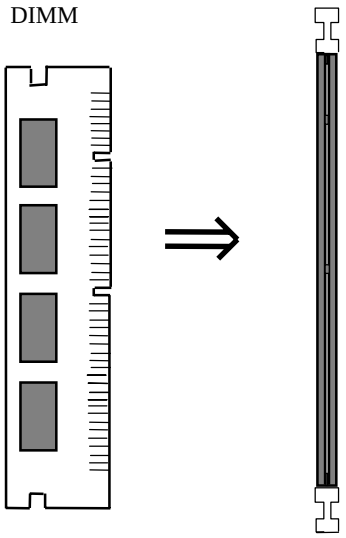
2-4-12 Game Port

Game port is a 16- pin connector connecting to the enclosed cable for Game, MIC, Line-in, Line-out.



2-5 DIMM Memory Installation

5S530 has 3 DIMMs on board. Only SDRAM memory is supported and DIMM1 must be installed with DIMM module. Chipset can support maximum memory up to 1.5 GBytes. Insert the module as shown. Due to different number of pins on either side of the breaks, the module will only fit in the orientation as shown.



Chipset ONLY SUPPORTS SDRAM; EDO RAM not supported.

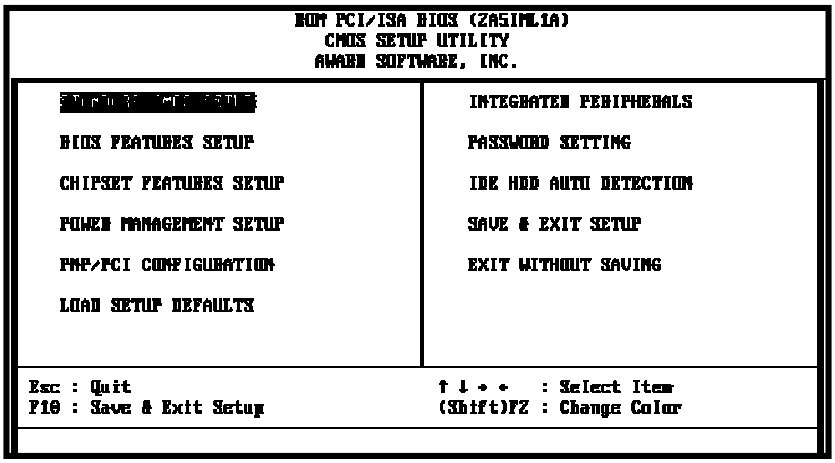
Since VGA shares memory from DIMM1, DIMM1 MUST be installed with SADRM module .

With 95/100 MHz CPUs like K6-2, the system MUST be installed with PC-100 100 MHz SDRAM module.

Chapter 3 BIOS Setup

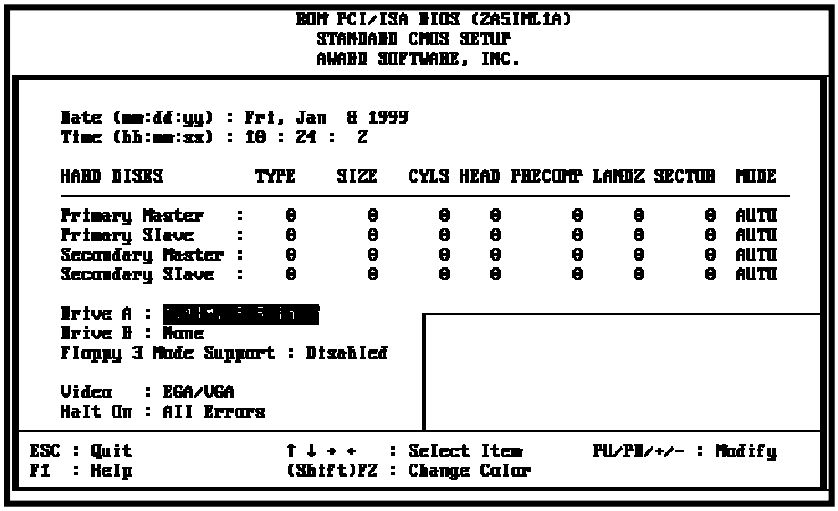
3-1 Award BIOS CMOS Setup

The menu displays all the major selection items and allow user to select any 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.



3-2 Standard CMOS Setup

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 **<PageDown>** or **<PageUp>** key or user can enter new data directly from the keyboard.



Hard Disk Configurations

1. TYPE : select from **"1" to "45"** to fill remaining fields with redefined values of disk drives. Select **"USER"** to fill the remaining fields. Select **"AUTO"** to detect the HDD type automatically.

2. SIZE : the hard disk size. The unit is mega byte(MB).

3. CYLS : the cylinder number of the hard disk.

4. HEAD : the read/write head number of hard disk. The range is from **"1" to "16".**

5. PRECOMP: the cylinder number at which the disk drive changes the write timing.

6. LANDZ : the cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.

7. SECTOR : the sector number of each track defined on the hard disk. The range is from **"1"** to **"64".**

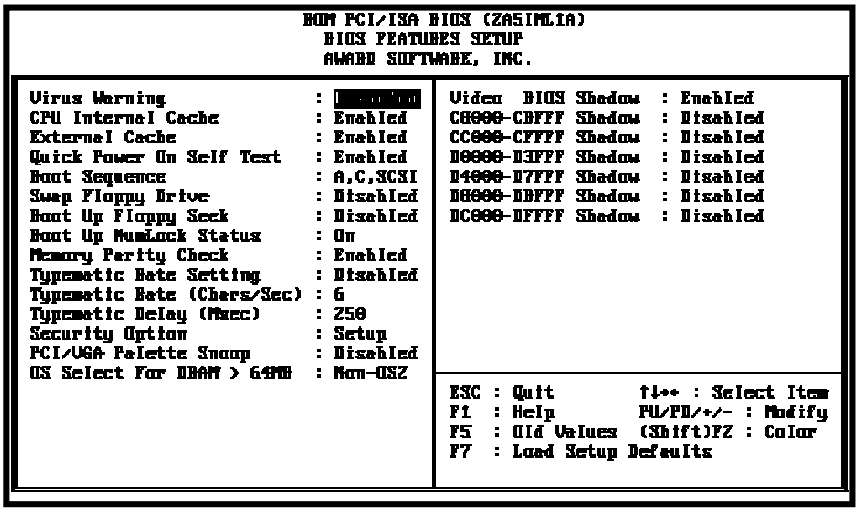
8. MODE :select **"AUTO"** to detect the mode type automatically. If your hard disk supports the **LBA** mode, select **"LBA"** or **"LARGE".** However, if your hard disk cyclinder is more than 1024 and does not support the lba function, you have to set at **"LARGE."** Select **"NORMAL"** if your hard disk supporting cylinder is below 1024.

Note 1: *if hard disk primary master/slave and secondary master/slave were set to* ***"auto,"*** *the hard disk size and model will be auto detected on display during POST.*

Note2: "halt on" *is to determine when to halt the system by the BIOS if error occurs during POST.*

3-3 BIOS Features Setup

Menu below shows all of the manufacturer's default values of this main board. Move the cursor by pressing direction keys and **<PageDown>** or **<PageUp>** key 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.



Anti-Virus Protection
:Enabled
:Disabled (default)

CPU Internal Cache
Enabled (default): enable L1 cache
Disabled: disable L1 cache

Quick Power On Self Test
This category speeds up power on self test.
Enabled (default)**:** BIOS will shorten or skip some check items.
Disabled: normal speed

Boot sequence
This category determines which drive the system searches first. Take **"A,C,SCSI"** for example. System will search in turn for floppy disk drive; second is hard disk drive, and finally SCSI drive. Default value is **"A,C,SCSI.".** Options are as below:
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
Enabled: floppy A&B will be swapped.
Disabled(default): floppy A&B will be not swapped.

Boot Up Floppy Seek
BIOS will determine if the floppy disk drive is 40 or 80 tracks. 360k type is 40 tracks while 720K/ 1.2M and 1.44M are all 80 tracks. Default value is **"Disabled."**

Boot Up Numlock Status
:On(default)
:Off

Memory Parity Check
This item allows memory parity check function.
:Enabled (default)
:Disabled

Typematic Rate Setting
This determines the typematic rate.
Enabled: enable typematic rate and typematic delay programming.
Disabled (default): 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(default)
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)
This is the interval between the first and second character displayed.
250 : 250 msec (default)
500 : 500 msec
750 : 750 msec
1000 :1000 msec

Security Option
:Setup (default)--- security protection in CMOS setup menu
Setting password in BIOS CMOS **"Supervisor Password" or User Password,**" the user needs to key in password if entering BIOS CMOS setup.
:System---security protection in system boot-up & BIOS setup
This function secures the system under system boot-up and BIOS setup.

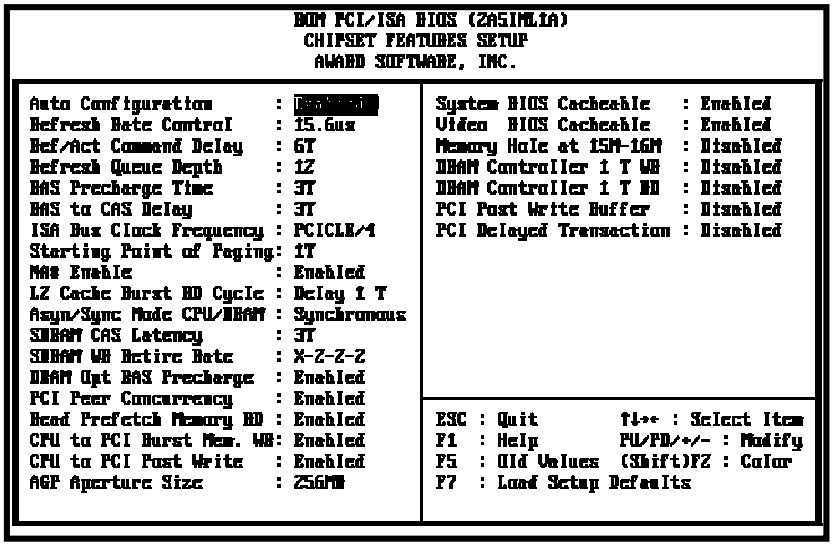
PCI/VGA Palette Snoop
Enabled: it allows you to install an enhanced graphics adapter card.
Disabled (default): If your graphics adapter card does not support the pallette snoop function, please set at **Disabled** to avoid system malfunction.

OS Select For DRAM> 64MB
This option is especially set for OS2 operating system. Set **"OS2"** for RAM memory over 64MB and set **"Non-OS2"** for other operating systems like Windows® 95/98 or Windows NT.
:Non-OS2 (default)
:OS2

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 (default)
Disabled: Video Shadow is disabled

C8000-CBFFF Shadow, CC000-CFFF Shadow, D0000-D3FFF Shadow: D4000-D7FFF Shadow, D8000-DBFFF Shadow, DC000-DFFF Shadow
These are categories determining whether optional ROM will be copied to RAM by 16KB or 32KB per unit and the size depends on chipset.
:Enabled
:Disabled(default)

3-4 Chipset Features Setup



Auto Configuration
:Enabled (default)
:Disabled

Asyn/Sync Mode CPU/DRAM
The system supports only synchronous operation for CPU and DRAM data transmission. Select "Synchronous" for this function.
:Synchronous (default)
:Asynchronous

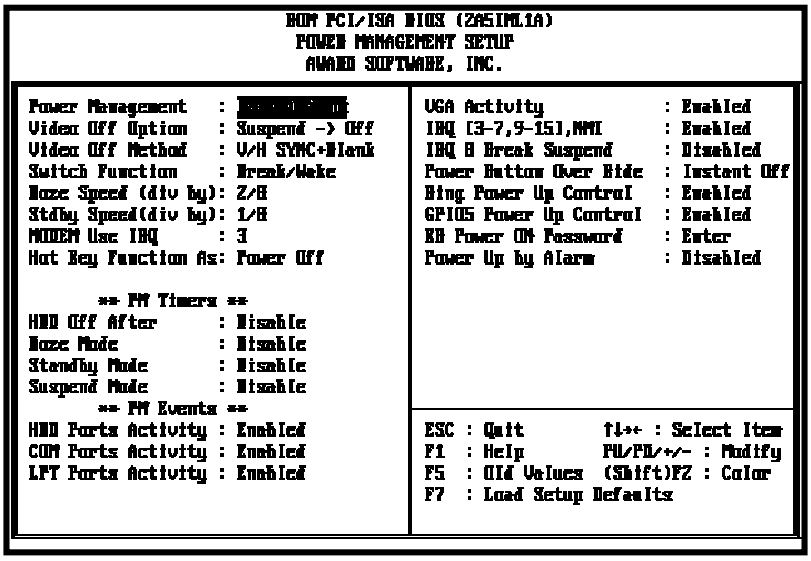
AGP Aperture Size
To select the size of the Accelerated Graphics Port (AGP) aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.
:256MB (default)
:128MB, 64MB, 32MB, 16MB, 8MB, 4MB

System BIOS cacheable
define whether system BIOS area cacheable or not.
:Enabled (default)
:Disabled

Video BIOS cacheable: *to de*fine whether video BIOS area cacheable or not.
:Enabled (default)
:Disabled

Memory Hole at 15M-16M: this field enable a memory hole in main memory space. CPU cycles matching an enabled hold are passed on to PCI note that a selected can not be changed while the L2 cache is enabled.
:Disabled (default)
:Enabled

3-5 Power Management Setup



Power Management
Choosing "User Define," users can configure their own power management

Item	Doze Mode	Standby Mode	Suspend Mode
User Define	Disable	Disable	Disable
Max Saving	10 Sec	10 Sec	10 Sec
Min Saving	4 Hours	4 Hours	4 Hours

Video Off Option
: Suspend → off (default)
: Susp, Stby → off
: All Modes →off
: Always on

Video Off Method
: V/H Sync+Blank (default)
: DPMS Supported
: Blank Screen

MODEM Use IRQ
: 3 (default)
: 4, 5, 7, 9,10,11,NA

Hot Key Function As
: Power Off (default)
: Suspend
: Disabled

*** PM Timers ***

HDD Power Down
:Disabled (default)
:1-15 min

Doze Mode
:Disabled (default)
:10 Sec, 1 min, 10 min, 30 min, 1 Hours, 2 Hours, 4 Hours

Standby Mode
:Disabled (default)
:10 Sec, 1 min, 10 min, 30 min, 1 Hours, 2 Hours, 4 Hours

Suspend Mode
:Disabled (default)
:10 Sec, 1 min, 10 min, 30 min, 1 Hours, 2 Hours, 4 Hours

*** PM Timers ***

Ring Power Up Controller
:Disabled
:Enabled(default)-- system can be turned on through modem.

Note: this function only works when the system is turned off from Windows mode, and Doze mode will not function.

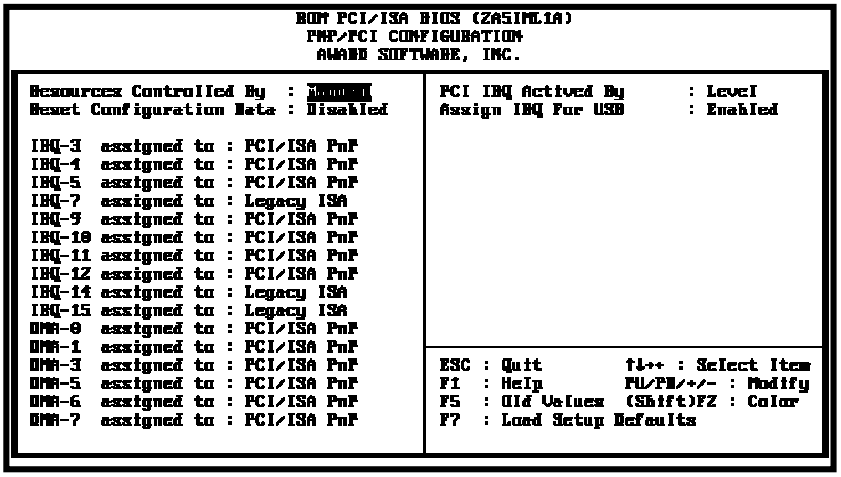
Power Up by Alarm: auto power on at the appointed time.
Enabled: key in the time of the day. System will turn on then.
Disable (default) **:** disble this function.

Note: this function only works when the system is turned off in Windows mode, and doze mode will not function.

KB Power ON Password

Item	Procedure	Special note
KB power on password	**1. enter password:** 5 spaces allowed. **2. Confirm password:** key in the password to confirm again.	The system can **only be turned on through KB password.** Case button can not work. If password is forgotten, please clear CMOS and reset again.

3-6 PNP / PCI Configuration Setup



Resources Controlled By
: Manual(default)
The table will show the below items: **"Reset Configuration Data, IRQ-3 assigned to, DMA-0 assigned to."** The user can adjust the shown items as required.
: Auto
The table will not show the above items, and the system will automatically assign the above setup.

Reset Configuration Data
: Disabled(default)
: Enabled--- to reset **"Extended System Configuration Data(ESCD)** when you exit setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot up.

IRQ-3/4/5/9/10/11/12 Assigned To----
: PCI/ISA PnP(default)
: Legacy ISA

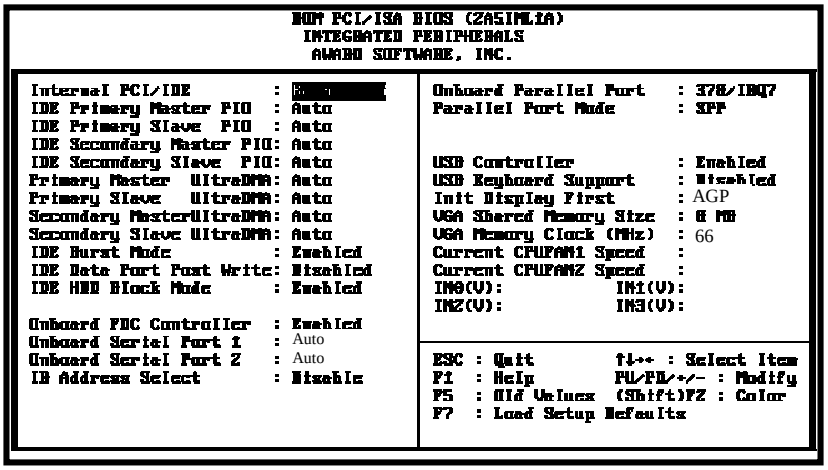
IRQ-7/14/15 Assigned To----
: PCI/ISA PnP
: Legacy ISA(default)

DMA-0 Assigned To--- DMA-7 Assigned To
: PCI/ISA PnP(default)
: Legancy ISA

PCI IRQ Actived By
There are 2 modes in activating PCI IRQ.
: Level (default)
: Edge

Assigned IRQ for USB
: Enabled (default)
: Disabled

3-7 Integrated Peripherals



Internal PCI/IDE
: Both (default)--- the user is allowed to modify to modify "Primary/ Secondary Master/Slave PIO", "Primary/Secondary Master/Slave UltraDMA."
: Disabled--- the user is not allowed to modify "Primary/ Secondary Master/Slave PIO", "Primary/Secondary Master/Slave UltraDMA."
: Primary--- it allows the user to modify "IDE Primary Master PIO", "IDE Primary Slave PIO", "Primary Master UltraDMA" "Primary Slave UltraDMA."
: Secondary--- it allows the user to modify "IDE Secondary Master PIO", "IDE Secondary Slave PIO", "Secondary Master UltraDMA" "Secondary Slave UltraDMA."

IDE Primary Master PIO
: Auto (default)
: Mode 0
: Mode 1
: Mode 2
: Mode 3
: Mode 4

IDE Primary Slave PIO
: Auto (default)
: Mode 0
: Mode 1
: Mode 2
: Mode 3
: Mode 4

IDE Secondary Master PIO
: Auto (default)
: Mode 0
: Mode 1
: Mode 2
: Mode 3
: Mode 4

IDE Secondary Slave PIO
: Auto (default)
: Mode 0
: Mode 1
: Mode 2
: Mode 3
: Mode 4

Primary Master UltraDMA
: Auto (default)
: Disable

Primary Slave UltraDMA
: Auto (default)
: Disable

Secondary Master UltraDMA
: Auto (default)
: Disable

Secondary Slave UltraDMA
: Auto (default)
: Disable

Onboard FDC Controller
: Enabled (default)
: Disabled

Onboard Serial Port 1
: 3F8/IRQ4
: 2F8/IRQ3
: 3E8/IRQ4
: 2E8/IRQ3
: Auto (default)
: Disabled

Onboard Serial Port 2
: 3F8/IRQ4
: 2F8/IRQ3
: 3E8/IRQ4
: 2E8/IRQ3
: Auto (default)
: Disabled

IR Address Select

Disable (default)	Select "Disabled" to disable IR function.
3F8H	IR Mode: HP SIR, ASKIR
	IRQ Mode: IRQ10, IRQ11, IRQ3, IRQ4
2F8H	IR Mode: HP SIR, ASKIR
	IRQ Mode: IRQ10, IRQ11, IRQ3, IRQ4
3E8H	IR Mode: HP SIR, ASKIR
	IRQ Mode: IRQ10, IRQ11, IRQ3, IRQ4
2E8H	IR Mode: HP SIR, ASKIR
	IRQ Mode: IRQ10, IRQ11, IRQ3, IRQ4

Onboard Parallel Port
: 378/IRQ7 (default)
: 3BC/IRQ7
: 278H/IRQ5
: Disabled

Parallel Port Mode

SPP (Default)	
EPP	
ECP	Choosing this item, there is another line shown: **ECP Mode Use DMA: 3**(default) **/ 1**
ECP+EPP	Choosing this item, another line is shown: **ECP Mode Use DMA: 3**(default) **/ 1**

USB Controller
: Enabled (default)
: Disabled

USB Keyboard Support
Select "Enabled" to enable the USB Keyboard function or "Disabled" if the system does not use USB keyboard.
: Enabled
: Disabled (default)

Video Shared Memory Size
This will decide the Video Memory size sharing from the system memory. Maximum is up to 8MB.
: 8 MB (default)
: 2 MB
: 4 MB

Current CPUFAN1 Speed/ Current CPUFAN2 Speed:
The system supports hardware monitoring and can detect CPU FN1 and CPU FAN2 speeds automatically. These 2 items show the status of the 2 CPU fans.

IN0(V)/ IN1(V)/ IN2(V)/ IN3(V)
System hardware monitoring can detect 4 sets of voltages: CPU Vio, CPU Vcore, and 2 power supply voltages. These 4 items shows the status of the 4 voltages.

3-8 Password Setting

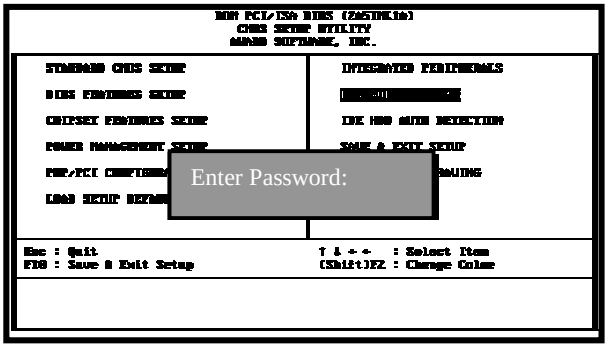
The "Supervisor/User Password setting" utility sets the security protection. There are two kinds of password functions in the setup menu : one is “Supervisor Password,” and the other is “User Password.” Their difference is:

Supervisor Password: this function allows you the right to change the options of setup menu.

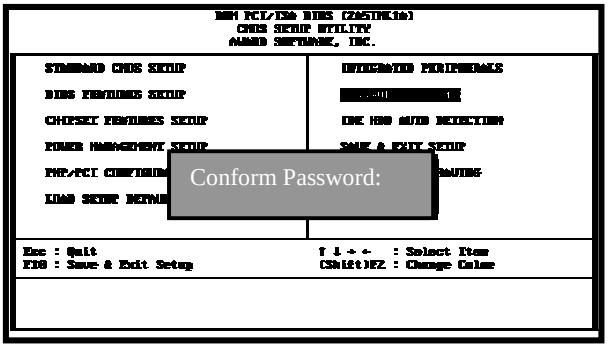
User Password: this function only allows you to enter the setup menu but not to change the options of the setup menu except “USER PASSWORD,” “SAVE & EXIT SETUP,” and “EXIT WITHOUT SAVING.”

1. How to set “Supervisor Password” & “User Password”

Step 1: Enter Password
Press **<Enter>** after appointing the password.



Step 2: Confirm Password
Typing the password again and pressing **<Enter>** .



Note: If you forget password, please clear CMOS.
(refer to JP3 CMOS status)

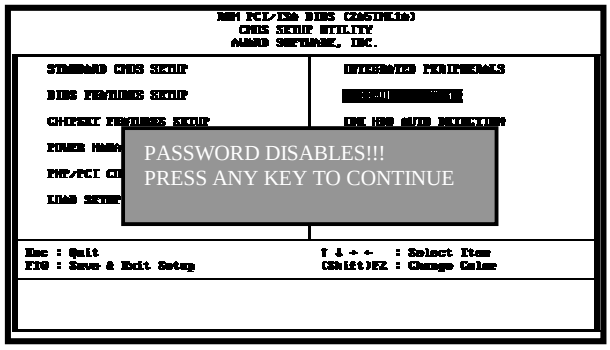
Step 3: Set "Security Option" in "BIOS Features Setup"

After setting password, enter "Security Option" in "BIOS Features Setup." There are 2 options "Setup" & "System." "Setup" secures CMOS setup. "System" secures PC sytem and password is required during system boot- up and CMOS setup..

2. How to disable Password Setting

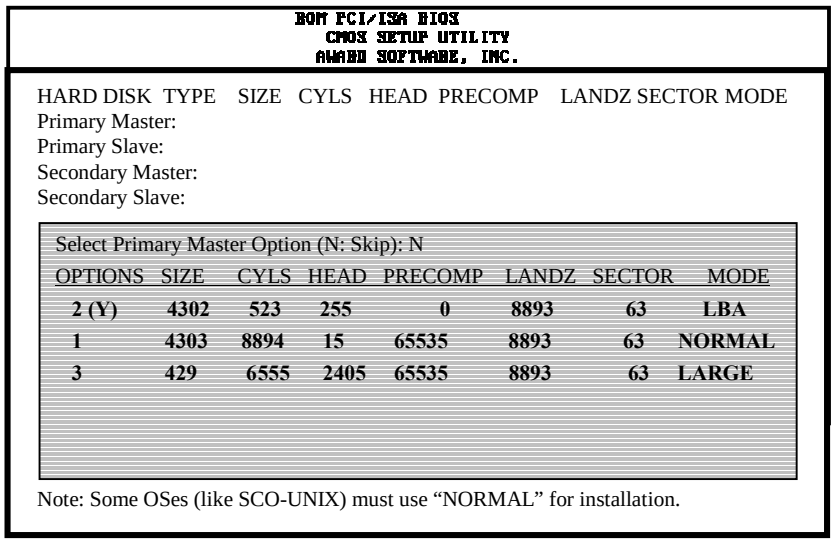
Step 1: **Go to CMOS Setup Menu** (need to key in password first)

Setp 2: **Enter Password Setting**
After enter, it shows "Enter Password." Press the **<Enter>** key instead of entering a new password when **"ENTER PASSWORD"** appears. It will inform **"PASSWORD DISABLED PRESS ANY KEY TO CONTINUNE."** Pess any key as instructed to disable password.



3-9 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 installed in the system automatically or you can set hard disk type to auto in the standard CMOS setup. You don't need the **"IDE HDD Auto Detection"** utility. The BIOS will auto-detect the hard disk size and model on display during post.



Note: Some OSes (like SCO-UNIX) must use “NORMAL” for installation.

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

1. 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)
X No. Per Sector	(512)
	528 MB

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

2. LBA (Logical Block Addressing) Mode
A new HDD accessing method to overcome the 528 MB 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 GB which is obtained by the following formula:

No. Cylinder	(1024)
X No. Head	(255)
X No. Sector	(63)
X No. Bytes Per Sector	(512)
	8.4 GB

3. 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:

Cyls.	Head	Sector	Mode
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. A reverse transformation process will be made inside int 12h in order to access the right HDD address the right HDD address!

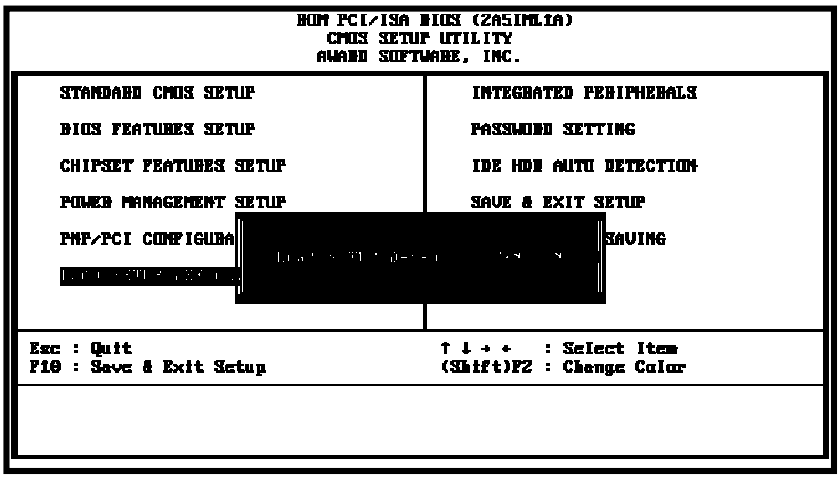
4. Maximum HDD Size:

	No. Cylinder	(1024)
X	No. Head	(32)
X	No. Sector	(63)
X	No. Bytes Per Sector	(512)
		1 GB

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 an operating system which replaces the whole int 13h. Unix operating systems do not support either LBA or large and must utility the standard mode. Unix can support drives larger than 528MB.

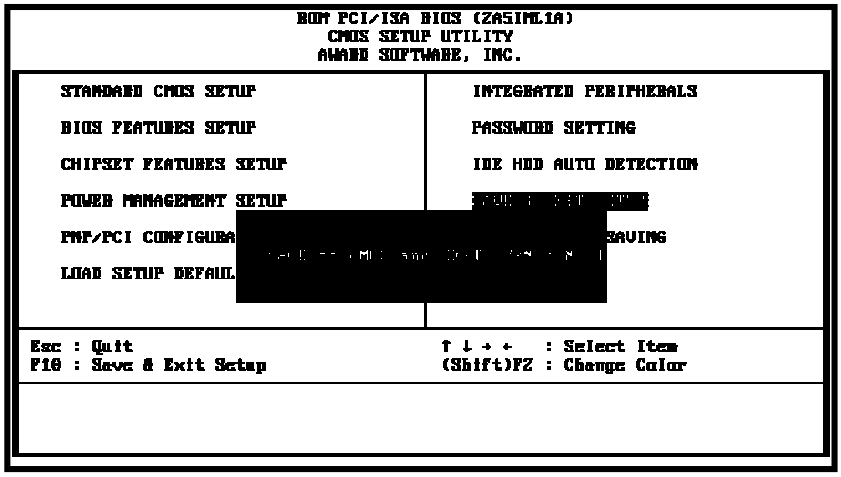
3-10 Load Setup Defaults

"Load Setup Defaults" loads optimized settings which are stored in the BIOS ROM. The auto-configured settings only affect "**BIOS Features Setup"** and **"Chipset Features Setup"** screens. There is no effect on the standard CMOS setup. To use this feature, highlight it on the main screen and press the **<Enter>** key. A line will appear on screen asking if you want to load the setup default values. Press the **<Y>** key and then press the **<Enter>** key . The setup defaults will then load. Press **<N>** if you don't want to



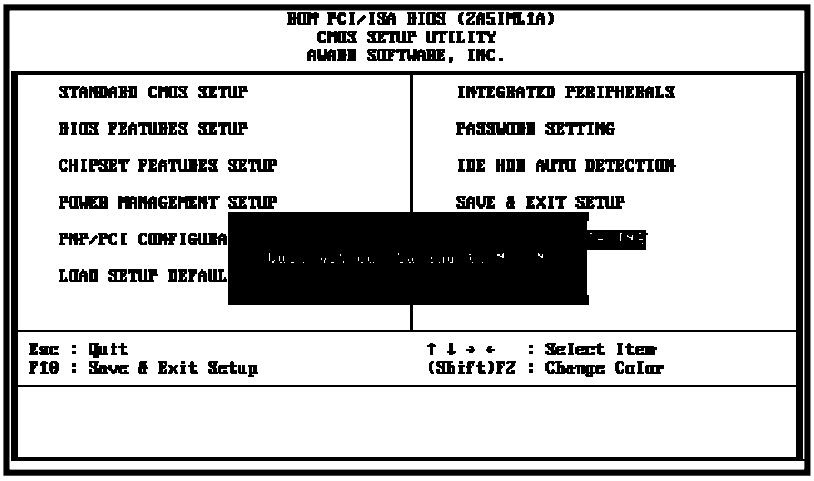
3-11 Save & Exit Setup

The **"Save & Exit Setup"** option will bring you back to boot up procedure with all the changes, you have made which are recorded in the CMOS RAM.



3-12 Quit Without Saving

The **"Quit 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.



Chapter 4 Appendix

4-1 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)

4-2 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
1F0-1FB	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

4-3 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

4-4 Interrupt Map

NMI: non-maskable interrupt

IRQ(H/W):

1. 0 system timer interrupt from timer 0
2. 1 keyboard output buffer full
3. cascade for IRQ 8-15
4. serial port2
5. serial port1
6. parallel port 2
7. floppy disk (SMC chip)
8. parallel port 1
9. RTC clock
10. available
11. available
12. available
13. PS/2 mouse
14. math coprocessor
15. onboard hard disk (IDE1) channel
16. onboard hard disk (IDE2) channel

4-5 RTC & CMOS RAM Map

RTC & CMOS :
00 seconds
01 seconds 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
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

4-6 Award BIOS Hard Disk Type

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
1	306	4	128	305	17	10MB
2	615	4	300	615	17	21MB
3	615	6	300	615	17	32MB
4	940	8	512	940	17	65MB
5	940	6	512	940	17	49MB
6	615	4	65535	615	17	21MB
7	462	8	256	511	17	32MB
8	733	5	65535	733	17	31MB
9	900	15	65535	901	17	117MB
10	820	3	65535	820	17	21MB
11	855	5	65535	855	17	37MB
12	855	7	65535	855	17	52MB
13	306	8	128	319	17	21MB
14	733	7	65535	733	17	44MB
16	612	4	0	663	17	21MB
17	977	5	300	977	17	42MB
18	977	7	65535	977	17	59MB
19	1024	7	512	1023	17	62MB
20	733	5	300	732	17	31MB
21	733	7	300	732	17	44MB
22	733	5	300	733	17	31MB
23	306	4	0	336	17	10MB
24	977	5	0	925	17	42MB

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
25	1024	9	65535	925	17	80MB
26	1224	7	65535	754	17	74MB
27	1224	11	65535	754	17	117MB
28	1224	15	65535	699	17	159MB
29	1024	8	65535	823	17	71MB
30	1024	11	65535	1023	17	98MB
31	918	11	65535	1023	17	87MB
32	925	9	65535	926	17	72MB
33	1024	10	65535	1023	17	89MB
34	1024	12	65535	1023	17	106MB
35	1024	13	65535	1023	17	115MB
36	1024	14	65535	1023	17	124MB
37	1024	2	65535	1023	17	17MB
38	1024	16	65535	1023	17	142MB
39	918	15	65535	1023	17	119MB
40	820	6	65535	820	17	42MB
41	1024	5	65535	1023	17	44MB
42	1024	8	65535	1023	17	68MB
43	809	6	65535	852	17	42MB
44	809	9	65535	852	17	64MB
45	776	8	65535	775	17	104MB
46	AUTO	0	0	0	0	
47	USER'S	TYPE				

4-7 ISA I/O Address Map

I/O Address (HEX)	**I/O device**
000 - 01F	DMA Controller 1, 8237A-5
020 - 03F	Interrupt Controller 1, 8259A
040 - 05F	System Timer, 8254-2
060 - 06F	8042 Keyboard Controller
070 - 07F	real-time Clock/CMOS and NMI Mask
080 - 09F	DMA Page Register, 74LS612
0A0 - 0BF	Interrupt Controller 2, 8259A
0C0 - 0DF	DMA Controller 2, 8237A-5
0F0 - 0FF	i486 Math Coprocessor
1F0 - 1F8	Fixed Disk Drive Adapter
200 - 207	Game I/O
20C - 20D	Reserved
21F	Reserved
278 - 27F	Parallel Printer Port 2
2B0 - 2DF	Alternate Enhanced Graphic Adapter
2E1	GPIB Adapter 0
2E2 - 2E3	Data Acquisition Adapter 0
2F8 - 2FF	Serial Port 2 (RS-232-C)
300 - 31F	Prototype Card
360 - 363	PC Network (Low Address)
364 - 367	Reserved
368 - 36B	PC Network (High Address)
36C - 36F	Reserved
378 - 37F	Parallel Printer Port 1
380 - 38F	SDLC, Bisynchronous 2
3B0 - 3BF	Monochrome Display and Printer Adapter

I/O Address (HEX)	**I/O device**
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3C0 - 3CF	Enhanced Graphics Adapter
3D0 - 3DF	Color/Graphics Monitor Adapter
3F0 - 3F7	Diskette Drive Controller
3F8 - 3FF	Serial Port 1 (RS-232-C)
6E2 - 6E3	Data Acquisition Adapter 1
790 - 793	Cluster Adapter 1
AE2 - AE3	Data Acquisition Adapter 2
B90 - B93	Cluster Adapter 2
EE2 - EE3	Data Acquisition Adapter 3
1390 - 1393	Cluster Adapter 3
22E1	GPIB Adapter 1
2390 - 2393	Cluster Adapter 4
42E1	GPIB Adapter 2
62E1	GPIB Adapter 3
82E1	GPIB Adapter 4
A2E1	GPIB Adapter 5
C2E1	GPIB Adapter 6
E2E1	GPIB Adapter 7

Chapter 5 Q & A

5-1 Errors Messages During Power On Self Test

During **power on self test (post)**, BIOS will automatically detect the system devices. Below is the questions that users may always meet. The user may press **"Esc"** key to skip the full memory test.

1. Beep sound
On power on, the system make beep sound to offer different messages. If the system is configured correctly, it prompts a short beep to show correct the devices configuration is done correctly. When VGA card and DIMM modules are not plugged well, the system makes longer and constant beep sounds.

2. BIOS ROM checksum error
It indicates the checksum of the BIOS code is not right and system will always halt on power on screen. Contact the dealer to exchange a new BIOS.

3. CMOS battery fails
It indicates the CMOS battery does not work. Contact the dealer to exchange a new battery.

4. CMOS checksum error
It indicates the CMOS checksum is incorrect. Load the default values in BIOS to solve this problem. This error may result from a weak BIOS, so exchange a new BIOS if necessary.

5. Hard disk initialize
Please wait a moment…
Some hard drives require more time to initialize.

6. Hard disk install failure
The system can not find or initialize the hard drive controller or the drive. Check if the controller is set correctly. If no hard disk is installed, **"Hard drive selection"** must be set to **"none."**

7. Keyboard error or no keyboard present
This means the system can not initialize the keyboard. Check if the keyboard is plugged well and be sure no keys are pressed during power on self test.

8. Keyboard is lock out- Unlock the key
Normally when this message comes out, check if there is anything mis-placed on the keyboard. Be sure nothing touches the keys.

9. Memory test fails
There will be more information to specify the type and location of the memory error.

10. Primary master hard disk fail
The BIOS find an error in the primary master hard disk drive.

11. Primary slave hard disk fail
The BIOS finds an error in the primary slave hard disk drive.

12. Secondary master hard disk fail
The BIOS finds an error in the secondary slave master hard disk drive.

13. Secondary slave hard disk fail
The BIOS finds an error in the secondary slave IDE hard disk drive.

5-2 Limitation on SIS530 VGA Hardware

This section is provided by Silicon Integrated Systems Corp., informing SIS530 VGA design limitation. As been advised, the limitation occurs from different design rules or from that hardware design does not support. Hence, under certain software or program tests, they may fail or error message appears.

Winbench 98 test:

1. 3D Winbench 98: 3D Quality #25, #26 tests not capable
Reason: SiS530 doesn't support Fog Table function.

2. 3D Winbench 98: 3D Quality #36 test fail.
Reason: SiS530 does not support anti-aliasing function.

3. 3D Winbench 98: 3D Quality #39 test fail.
Reason: SiS530 only supports 16-bit Z- buffer, which is not enough to perform non-texture perspective.

Winbench 99 test

1. 3D Winbench 99: 3D Quality #36, #57, #58 tests fail.
Reason: SiS530 only supports texture perspective, so it fails in testing non-texture perspective.

2. 3D Winbench 99: 3D Quality #47, #59 tests fail.
Reason: SiS530 only supports 16-bit Z- buffer. This is not enough to perform non-texture perspective.

3. 3D Winbench 99: 3D Quality #48 test fail.
Reason: SiS530 uses different fill rule with Microsoft®. It fails in test, but has no problem is normal operation.

4. 3D Winbench 99: 3D Quality #12 test not capable
Reason: SiS530 doesn't support Mipmap LOD Bias function.

5. 3D Winbench 99: 3D Quality #26, #27 tests not capable
Reason: SiS530 doesn't support FOG Table function.

6. 3D Winbench 99: 3D Quality #46 test fail.
Reason: SiS530 doesn't support Z Bias function.

DCT 100 test

1. DCT 100: D3D Blend Alpha on 4 sub-tests test fail
Reason: SiS530 doesn't support SRCCOLOR & INVSRCCOLOR for texture source blend and DESTCOLOR & INVDESTCOLOR for texture destination blend function.

2. DCT 100: PC98#24 test fail
Reason: SiS530 doesn't support SRCCOLOR & INVSRCCOLOR for texture source blend function.

3. DCT 100: PC98#25 test fail
Reason: SiS530 doesn't support BLEND-ADD for texture blend function.

4. DCT 100: PC98#26 test fail
Reason: SiS530 doesn't support PALETTE texture format.

5. DCT 100: PC98#27 test fail
Reason: SiS530 doesn't support texture size larger than 512*512 pixels.

6. DCT 100: PC98#28 test fail
Reason: SiS530 doesn't support SRCCOLOR & INVSRCCOLOR for texture destination blend function.

7. DCT 100: PC98#28 test fail
Reason: SiS530 doesn't support PALETTE texture format.

8. DCT 100: Beta Preview\Blend-Decal test fail
Reason: SiS530 doesn't support this function.

9. DCT 100: Beta Preview\Blend-Modulatel Mask test fail
Reason: SiS530 doesn't support this function.

10.DCT 100: Beta Preview\Blend-ADD test fail
Reason: SiS530 doesn't support this function.

11.DCT 100: Beta Preview\W Compare test fail
Reason: SiS530 doesn't support WBUFFER.

12.DCT 100: Beta Preview\Compressed texture test fail
Reason: SiS530 doesn't support compressed texture.

13.DCT 100: Beta Preview\Stencil test fail
Reason: SiS530 doesn't support Stencil function.

14.DCT 100: Beta Preview\Alpha Palette fail
Reason: SiS530 doesn't support this function.

15.DCT 100: Beta Preview\Bald test fail
Reason: SiS530 doesn't support bump mapping function.

Other conditions

1. Game: “Incoming,” “Motlcross Madness”. eg: the smoke when fire gun or the dust when driving car is blocky.
Reason: When the blinear filter function is enabled, the pixel will be transparent whenever either of the four around pixels is transsparent.

2. Game “Outlaws,” “Forsaken,” “Jedi Knight.” eg.. Pixelization in these games
Reason: SiS530 doesn’t support anti-aliasing, so the edge of 3D mesh will not be very smooth.

3. “Final Reality,” “Incoming,” eg. Font or logo distortion
Reason: These fonts and logo are textures. On texture perspective correct, SiS530 will cause a little bit of distortion.

4. In shared frame buffer, the snow appears when playing AVI files and recording audio files with Creative 137x audio.
Reason: In shared frame buffer mode, SiS530 must provide the pre-emptive mechanism to guarantee the minimum bandwith for GUI’s CRT refreshing the display by requesting resource. Under the strategy, SiS530 will induce a limitation of memory bandwith. Some PCI cards with low performance on PCI interface, it would insert more wait state to lengthen the transaction time. They will violate the limitation of memory bandwith on SiS530 shared frame buffer mode and cause the screen to appear snow.

5-3 Web-site Service

If you have any questions this manual may not help, like updated BIOS, or any information you need regarding our products, please visit our web-site at

- http://www.lucky-star.com.tw

Website to bundle updated "XStore Pro" IDE driver
Updated drivers will be constantly provided at High Point's website. Lucky Star website is also linked to High Point.

- http://highpoint-tech.com