



# Mainboard

**SL-85DRS**

**User Manual V2.0**

# NOTICE

Product Model	: SL-85DRS
Manual Revision	: V2.0
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## ITEM CHECKUP

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- Mainboard
- Support CD
- Bundled Bonus Pack CD
- Bundled Bonus Pack Manual
- Temperature Sensor Cable (Optional)
- ATA66/100 IDE Cable
- FDD Cable
- User Manual
- RS232 Cable



# **Chapter 1 Specification**

## **Introduction**

This mainboard features an integration of the powerful processor Intel Pentium 4 and the single-chip North Bridge SiS 645. The Intel P4 processor is a rapid execution engine providing 400MHz quadpumped system bus to allow 3.2GB data transfer rates possible, while North Bridge Sis 645 plus South Bridge SiS 961 support Intel P4 processor to execute the 400MHz FSB, the AGP 4X external bus, the LPC Super I/O and the DDR SDRAM data transfer. This chapter is to introduce to users every advanced function of this high performance integration.

**Topics included in this chapter are:**

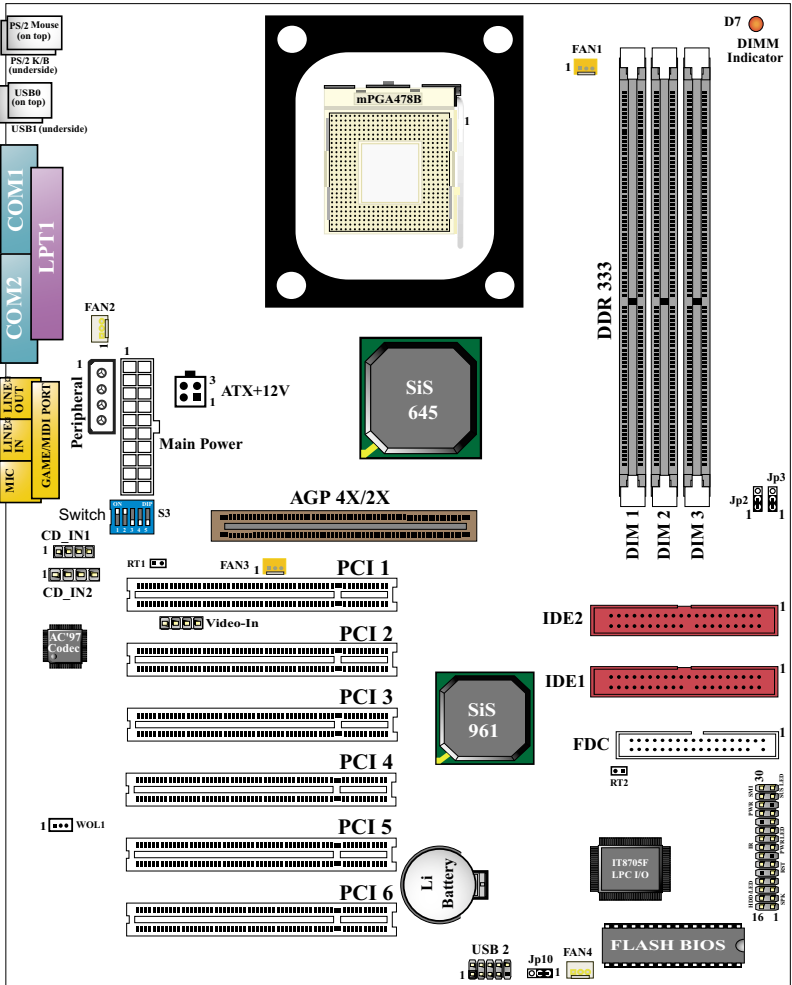
**1-1 Mainboard Specifications**

**1-2 Mainboard Layout**

**1-3 Mainboard Specification Table**

**1-4 Chipset Diagram**

# 1-1 Main board layout and Component Locations:



## **1-2 Mainboard Specifications**

### **1-2.1 CPU Socket**

CPU Socket 478B on board, supporting Intel® Pentium 4 processors in 478-pin package for :

- 400MHz System Bus;
- Hyper pipelined technology;
- Advanced dynamic execution;
- Advanced transfer cache;

### **1-2.2 System Chipsets**

North Bridge SiS 645 plus South Bridge SiS 961 working with Intel Pentium 4 Processor for managing and arbitrating operations between all system interfaces:

### **1-2.3 Memory**

3 DDR DIMM 184-pin sockets on board for DDR333/266/200 SDRAMs, supported by 2.5V default voltage :

- Supporting unbuffered SDRAM transfer rate 100/133/166MHz up to 3GB DDR266/200 SDRAMs in 3 DIMMs or 2GB DDR333 in 2 DIMMs
- Installation of mixed volumes yet same type of DDR SDRAM modules supported

### **1-2.4 AMI BIOS V2.01A**

- Supporting Plug & Play V1.0
- Flash Memory for easy upgrade
- Supporting BIOS Writing Protection and Year 2000 compliant
- BIOS Setup supported (Please see Chapter 4 BIOS Setup)

### **1-2.5 Accelerated Graphics Port (AGP) Interface**

AGP Controller embedded, supporting:

- 1.5V/4X, 3.3V/2X power mode , AGP voltage selectable in BIOS Setup
- 2x/ 4x AD and SBA signalling, AGP pipelined split-transection longburst transfers up to 1GB/sec.
- AGP v2.0 compliant

### **1-2.6 Advanced system Power Management, supporting:**

- ACPI 1.0B compliant (Advanced Configuration and Power Interface)
- APM V1.2 compliant (Legacy power management)
- ACPI STR mode (Suspend To RAM) , POS (Power On Suspend) and STD (Suspend to Disk)
- PS/2 Keyboard & Mouse power on
- Supporting Ring Power Up Control for Wake-on-Modem(external) and Wake-on-LAN
- Real Time Clock (RTC) with date alarm, month alarm, and century field
- USB wake-up Function;

### **1-2.7 Multi-I/O Functions:**

- PCI EIDE Controller, supporting:
  - 2x Ultra ATA100 / 66 / 33 IDE connectors supporting up to 4 IDE devices
- Dedicated IR Functions:
  - Third serial port dedicated to IR function either through the two complete serial ports or the third dedicated port Infrared-IrDA (HPSIR) and ASK (Amplitude Shift Keyed) IR
- Multi-mode parallel Data transfer:
  - Standard mode, ECP and EPP support
- Floppy Disk connector:
  - One FDD connector with drive swap support
- Universal Serial Bus Transfer Mode:
  - USB V1.1 compliant;
  - 2 built-in USB connectors and one USB Header (USB2) which requires an optional USB cable to provide 2 more optional USB ports
- PS/2 Keyboard
- PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
  - Two complete Serial Ports (COM1 & COM2) on board

### **1-2.8 Expansion Slots**

- Six PCI bus Master slots
- One AGP 4x/2X slot
- Three DDR DIMM slots

### **1-2.9 Hardware Monitor on board**

Programmable hardware status to provide monitoring and alarm for flexible desktop management of hardware temperatures. Utility Software is enclosed in Support CD to help display monitoring statuses of:

- 6 voltages, 2 types of hardware temperatures, 2 Fan speeds

### **1-2.10 AC'97 Audio Codec on board**

AC'97 Audio codec on board supported by AC97 Link on chip SiS 961

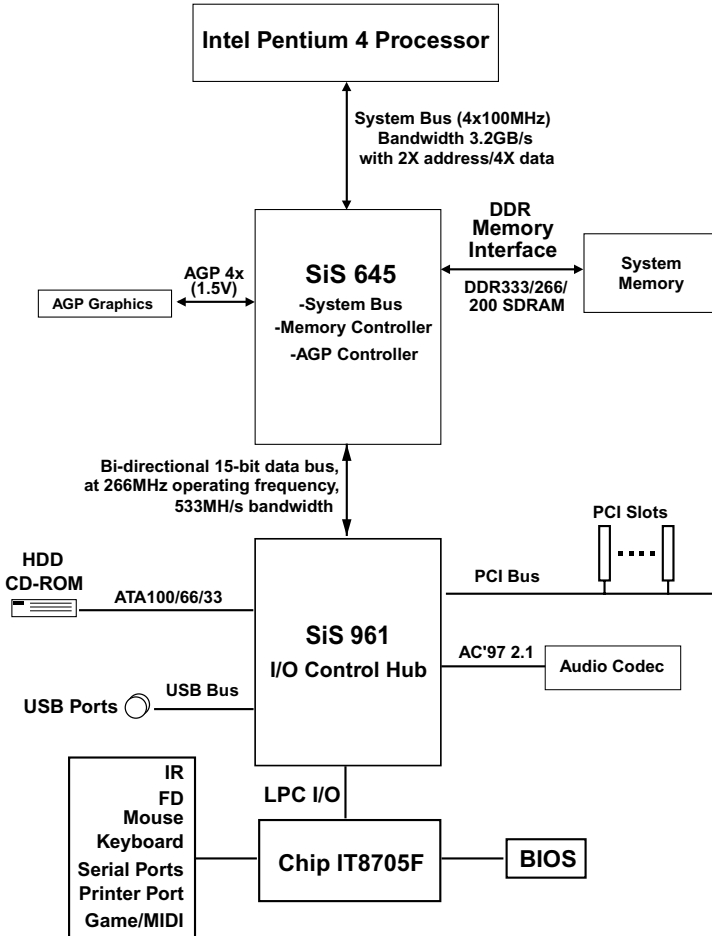
### **1-2.11 Form Factor**

- ATX form factor, ATX power supply, version 2.03 compliant, supported by one Main Power Connector, one +12V Power Connector and one Peripheral Power Connector
- Mainboard size: 305mm x 225mm

## 1-3 Mainboard Specification Table

<b>Model</b>	<b>SL-85DRS</b>
<b>CPU</b>	<b>Socket PGA 478B for Intel Pentium 4 CPU</b>
<b>Memory Controller Hub</b>	<b>SiS 645</b>
<b>I/O Controller Hub</b>	<b>SiS 961</b>
<b>BIOS</b>	<b>AMI BIOS</b>
<b>I/O Chip</b>	<b>IT 8705F</b>
<b>Memory</b>	<b>Supporting DDR333/266/200 SDRAM up to 3GB 3 DIMM Slots</b>
<b>Onboard IDE</b>	<b>2 x ATA 33/66/100 IDE ports</b>
<b>I/O Connectors</b>	<b>4 x USB ports, 1 x FDD port, 2 x COM ports, 1 x LPT port, 1 IrDA, 1 PS/2 Mouse, 1 PS/2 K/B</b>
<b>PCI slot</b>	<b>6 PCI Master Slots</b>
<b>AGP Interface</b>	<b>AGP 4X Mode</b>
<b>Audio</b>	<b>AC'97 Audio Codec</b>
<b>Hardware<sup>Ⓜ</sup> Monitoring</b>	<b>Yes</b>
<b>Power Supply</b>	<b>ATX 2.03 form factor with one Main power Connector one Peripheral Power Connector one +12V Power Connector</b>
<b>BIOS writing Protection</b>	<b>Yes</b>
<b>Keyboard power on function &amp; USB wake up Function</b>	<b>Yes</b>
<b>Remark</b>	

## 1-4 Chipset System Block Diagram



Intel Pentium 4 + SiS 645 + SiS 961 Diagram

**MEMO**



# **Chapter 2 Hardware Setup**

## **To Get things ready for Hardware setup !**

1. We recommend to install your CPU before any other components. For detailed installation instructions of processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heatsink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heatsink for proper installation. Improper fan and installation will damage your CPU.
3. In case CPU Vcore, CPU clock or Frequency Ratio is adjustable on board, please follow the instructions described in the User manual for proper setup. Incorrect setting will cause damage to your CPU.

**The following topics are included in this chapter:**

**2-1 Pentium 4 CPU Installation**

**2-2 Pentium 4 CPU Fan Installation**

**2-3 Memory Installation**

**2-4 HDD Installation**

**2-5 FDD Installation**

**2-6 AGP (Accelerated Graphic Port) Installation**

**2-7 ATX 2.03 Power Supply Installation**

**2-8 Jumper Settings for Devices on board**

**2-9 Other Connectors Configuration**

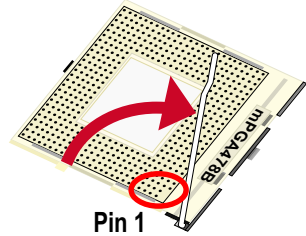
**2-10 IRQ Description**

## 2-1 CPU Installation with Socket 478

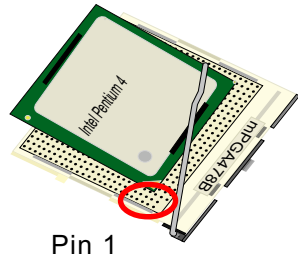
This mainboard is built with CPU Socket 478 ( 47-pin) supporting the Intel Pentium 4 CPU:

- Follow the steps described in this section to install the 478-pin Pentium 4 CPU into the on board Socket 478.
- After installation of Pentium 4 CPU, you must also install the specific Pentium 4 CPU fan designed in tandem with this CPU. This CPU Fan installation is described in next section.

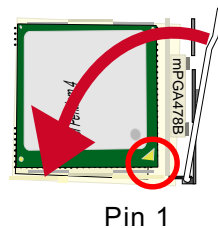
1. First pull sideways the lever of Socket 478, and then turn it up 90° so as to raise the upper layer of the socket from the lower platform.



2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the left. Adjust the position of CPU until you can feel all CPU pins get into the socket with ease.

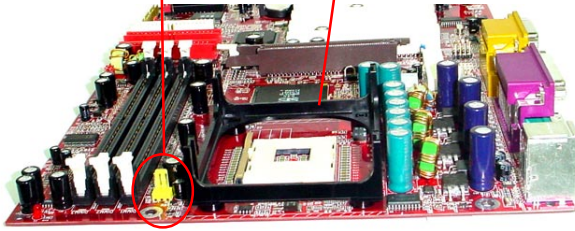


3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.

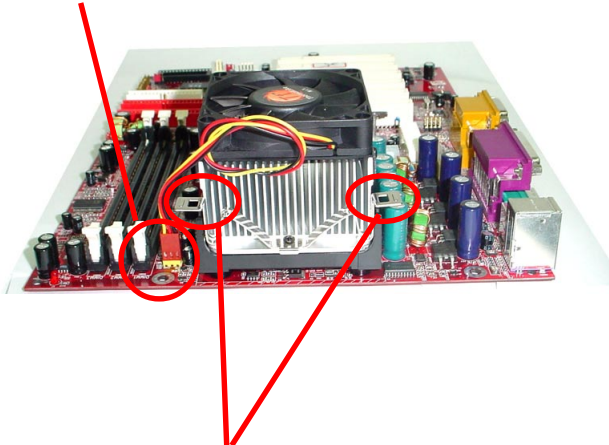


**2-2 Install Pentium 4 CPU Fan and Fan Connector :**

CPU Fan Connector    Pentium 4 Fanbase



Connect CPU FAN connector to CPU Fan



Press down latches to lock fan to fanbase

## 2-3 Memory Installation

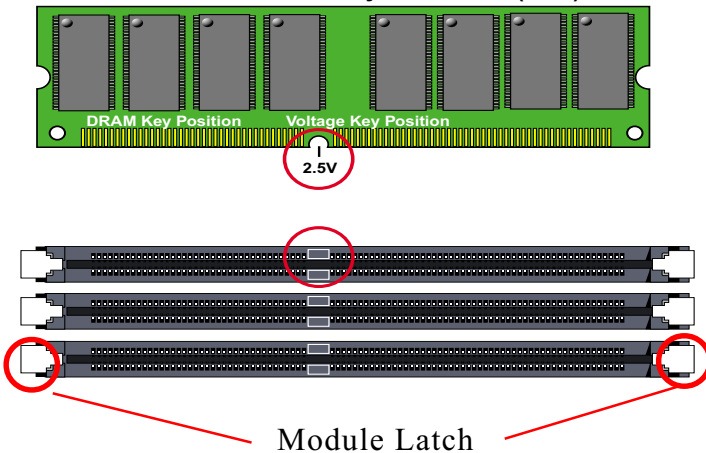
How to tackle with the memory Modules:

- Make sure to unplug your power supply before adding or removing memory module. Failure to do so may cause severe damage to both your main board and the memory module.
- Pay attention to the orientation of the DIMM slots. Forcing a DIMM in a socket improperly will damage the memory module and socket.
- Make sure you have the right type of memory module for your mainboard.

### 2-3.1 To Install DDR SDRAM Module for this Mainboard :

1. This mainboard only supports unbuffered DDR SDRAM. Do not insert other type of DDR SDRAM therein.
2. For DDR333, this mainboard can support up to 2GB memory in two DIMMs. That is, you can only use 1 or 2 DDR333 SDRAM modules.
3. For DDR266/200, this mainboard can support up to 3 GB memory in 3 DIMMs.
4. DDR DIMM socket has 184 pins and one notch. Insert a DDR SDRAM vertically into the 184-pin socket with its notch matching the one in the socket. Press the Module down in a gradual way until it surely reaches the bottom and clicks straight up the two latches on the left and right side of the socket. If any one of the latches has not turned up completely, you should unplug the module and press it down the socket a bit more firmly.

184-Pin DIMM Notch Key Definitions (2.5V)



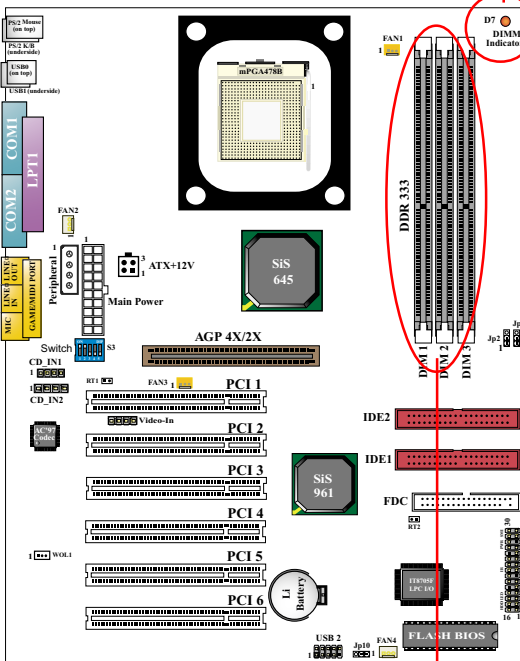
### 2-3.2 To Remove a DIMM:

Press down the holding latches on both sides of socket and the module will be released from the DIMM socket.

### 2-3.3 Indicator D7 for DIMM Socket Power On:

An indicator D7 is designed on board. Whenever system is started or is in STR status (Suspend to RAM), all the DIMM sockets on board will also get powered on with the set voltage, resulting in D7 lighting up. This indicator D7 is to warn users that, whenever DIMM socket is powered, no memory module should be removed from or added into it.

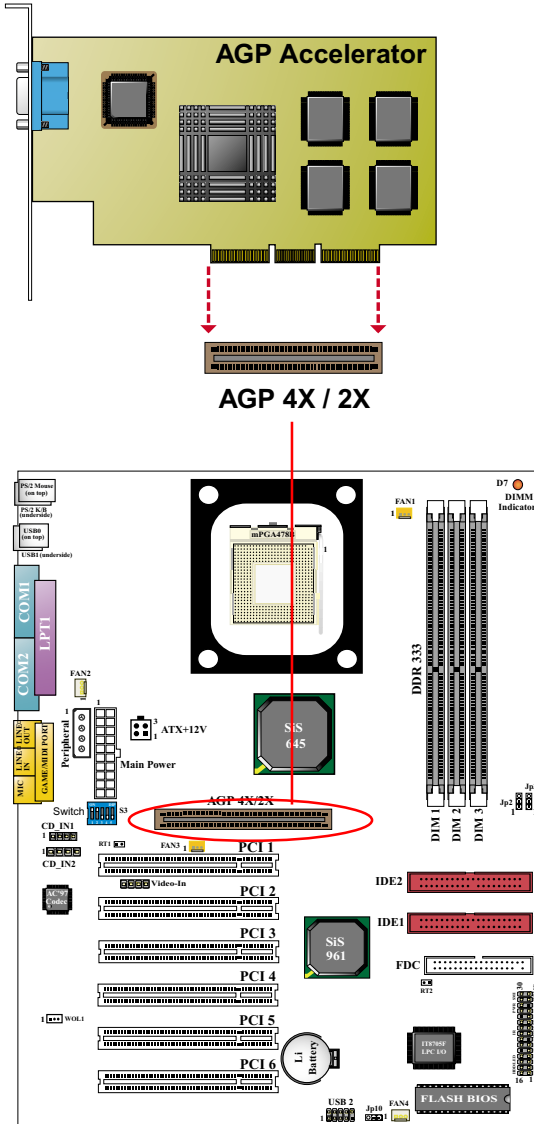
D7 DIMM Power On Indicator



DDR DIMM Sockets (184-pin)

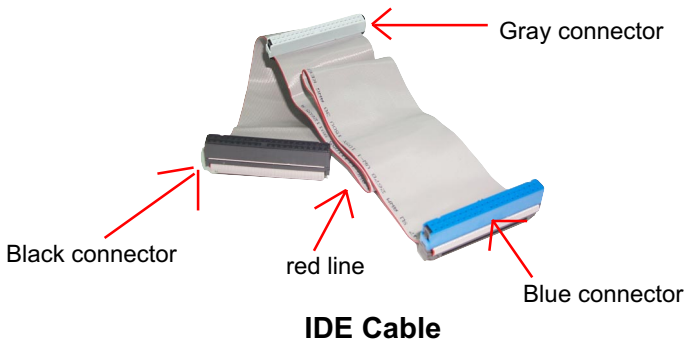
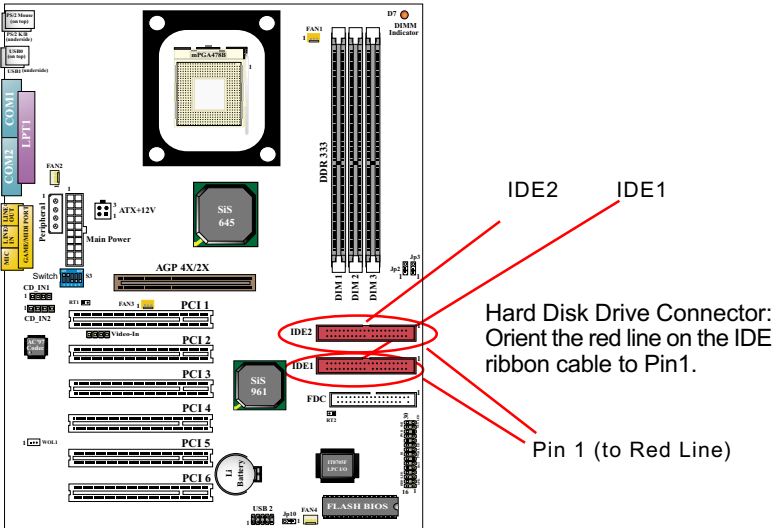
## 2-4 AGP (Accelerated Graphics Port) Installation:

The AGP slot on board supports 4X / 2X AGP card configuration. User can install either a 4X or 2X AGP card.



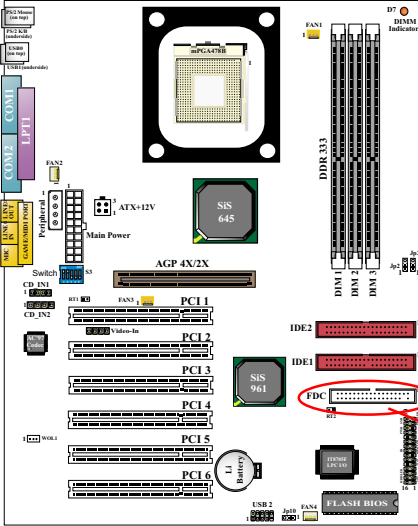
## 2-5 HDD Installation

To install HDD (Hard Disk Drive), you may connect the connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.



## 2-6 Floppy Disk Drive (FDD) Installation

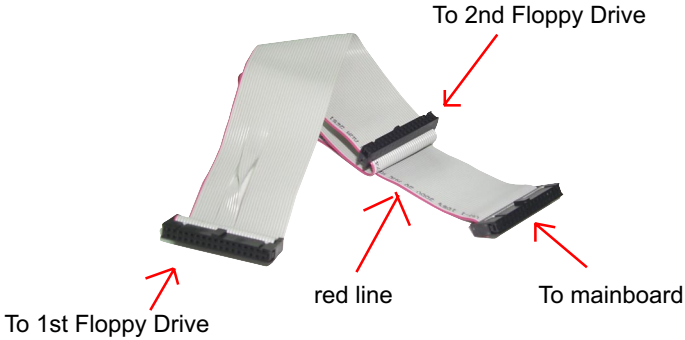
To install FDD (Floppy Disk Drive), you should connect the end of cable with single connector to the board, and connect the other end with two plugs to the floppy drives.



Floppy Disk Drive Connector:  
Orient the red line on the floppy ribbon cable to Pin 1.

Pin 1 (to Red Line)

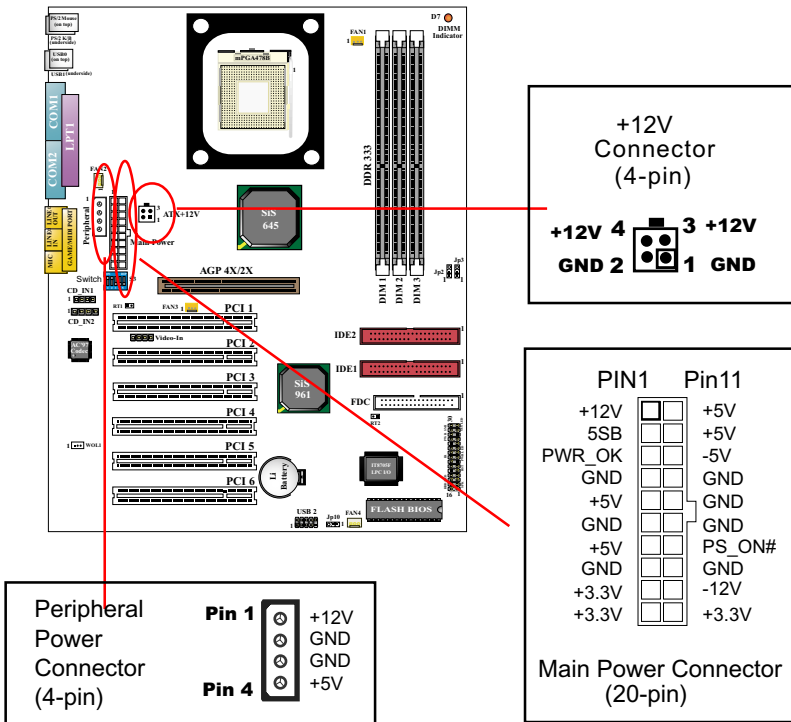
FDC



**FDD Cable**



## 2-7 ATX V 2.03 Power Supply Installation



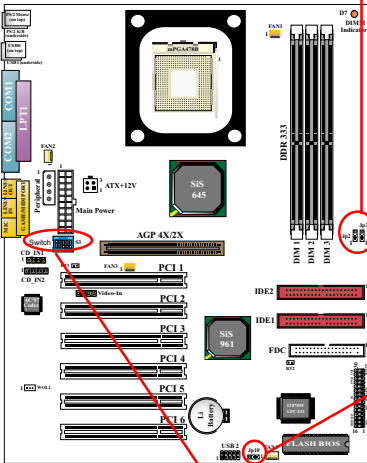
Intel Pentium 4 requires power support of ATX V2.03. To set up ATX2.03 Power Supply on this mainboard, Please take the following steps:

1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supply which can be either of the latest version 2.03 or of earlier ATX format.
2. If you use an ATX Power Supply Version 2.03 or later, you can now connect the on-board square-shaped +12V Connector to the square-shaped +12V Connector of your ATX Power Supply. In this case, it is not necessary for you to connect the on-board 4-pin Peripheral Power Connector to your Power Supply.
3. If you use an ATX power Supply of a version earlier than V2.03, you cannot find a square-shaped +12V Connector with your Power Supply; you must then connect the on-board 4-pin Peripheral Power Connector to the 4-pin Peripheral Power Connector of your Power Supply.

## 2-8 Jumper and Switch Settings

The following diagrams show the locations and settings of Switch and jumper blocks on the mainboard.

Jp2 & Jp3 DIMM Voltage Select								
DIMM Voltage	2.5V (default)		2.6V		2.7V		2.8V	
Jumper Setting	Jp2	Jp3	Jp2	Jp3	Jp2	Jp3	Jp2	Jp3
	1-2	1-2	1-2	2-3	2-3	1-2	2-3	2-3
	closed		closed		closed		closed	



Jp10 Clear CMOS	
	2-3 closed To clear CMOS
	1-2 closed (default) Normal status


S3 CPU Clock Select							
		On	On	Off	Off	Off	Off
		1	2	3	4	5	(Default)
DDR type	CPU Clock (MHz)	S3-1	S3-2	S3-3	S3-4	S3-5	
DDR266	default 100	on	on	off	off	off	
	105	off	off	off	off	on	
	108	off	on	off	off	on	
	112	off	off	on	off	on	
DDR333	133	off	on	on	off	on	
	100	on	off	off	on	off	
	133	on	on	on	off	on	

How to tackle with Jumpers:

- Do not remove the jumper when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, mainboard could be damaged.
- In the Jumper setting diagram, all jumper pins covered with black marks stand for closed pins by jumper caps.

### 2-8.1 Switch S3 for CPU Clock Select

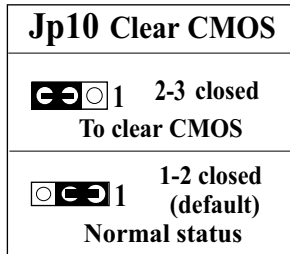
1. This mainboard is shipped to users with a 5-DIP Switch on board, by which user can select a CPU clock to match with the Pentium 4 processor installed on board. Yet users are not recommended to take Switch S3 as a foolproof tool for overclocking. Instead, it is safer and more advisable to select the CPU clock as near as possible to the one marked on the selected CPU.
2. An Advice from our Engineering Team:  
CPU Overclocking should always take the on-board components into account. If you are using DDR266 SDRAM on this mainboard, you must not set the switch S3 to the DDR333 settings; otherwise you risk system damage.

S3 CPU Clock Select							
		On				Off	
		1 2 3 4 5					
		On On Off Off Off (Default)					
DDR type	CPU Clock (MHz)	S3-1	S3-2	S3-3	S3-4	S3-5	
DDR266	default 100	on	on	off	off	off	
	105	off	off	off	off	on	
	108	off	on	off	off	on	
	112	off	off	on	off	on	
	133	off	on	on	off	on	
DDR333	100	on	off	off	on	off	
	133	on	on	on	off	on	

### 2-8.2 Jp10 Clear CMOS

When you have problem with rebooting you system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper Jp10, please follow the steps below:









1. Power off system;
2. Set JBAT1 to Pin 2-3 closed.
3. After 2 or 3 seconds, return the JBAT1 setting to Pin 1-2 closed.
4. CMOS data are restored to default. Remember never clear CMOS when system power is on.



### 2-8.3 Jp2 & Jp3 DIMM Voltage Select:

The default voltage 2.5V at DIMM sockets is for normal operation of the supported DDR SDRAM. In some case, when you try to do CPU overclocking, you then may also need to raise the transfer rate of the memory interface. Jp2 & Jp3 are designed on board to provide settings for selecting a higher DIMM voltage so as to raise the speed of the memory interface.

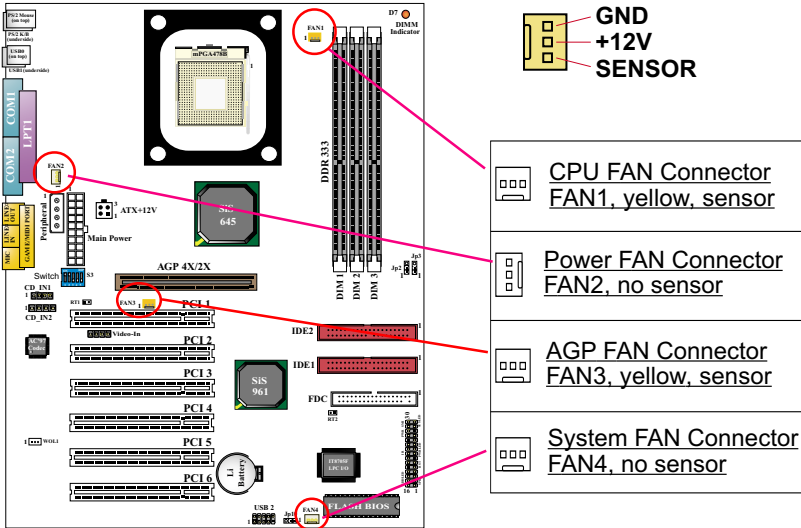
**Warning: In selecting a higher voltage than the default one, you are risking the stability of your system.**

<b>Jp2 &amp; Jp3 DIMM Voltage Select</b>								
<b>DIMM Voltage</b>	<b>2.5V (default)</b>		<b>2.6V</b>	<b>2.7V</b>	<b>2.8V</b>			
<b>Jumper Setting</b>	<b>Jp2</b>	<b>Jp3</b>	<b>Jp2</b>	<b>Jp3</b>	<b>Jp2</b>	<b>Jp3</b>	<b>Jp2</b>	<b>Jp3</b>
								
	1-2	1-2	1-2	2-3	2-3	1-2	2-3	2-3
	closed		closed		closed		closed	

## 2-9 Other Connectors Configuration

This section lists out all connectors configurations for users' reference.

### 2-9.1 On Board FAN Connectors



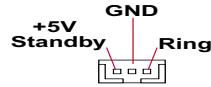
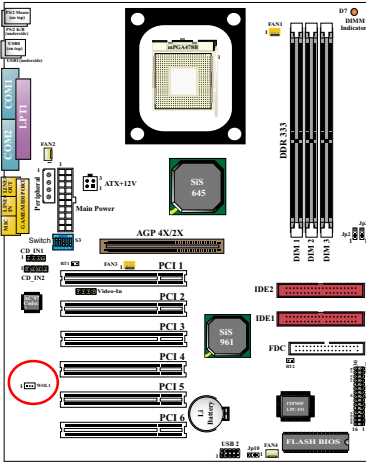
These fan connectors support CPU/Power/AGP/System cooling fan with +12V. When connecting the wire to FAN connectors, users should make sure that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND. If your mainboard has Hardware Monitor chipset on board, you must use a specially designed fan with speed sensor to take advantage of the monitoring function.

For fans with speed sensors, each rotation of the fan blades will send out 2 electric pulses, by which System Hardware Monitor will work out the fan rotation speed by counting the pulses.

**NOTE :** 2 “Yellow” fan connectors are used on this series to mark that they support fan speed sensor function. The other two white fan connectors do not support sensor function.

### 2-9.2 WOL1 Wake On LAN Connector

1. This connector connects to a LAN card with a Wake On Ring output. The connector powers up the system when it receives a wake-up packet or signal through the LAN card.
2. This feature requires that Ring Power Up Control feature is enabled in the BIOS setting “Power Management Setup” and that your system must be on ATX power supply with at least 720mA / +5V standby power.

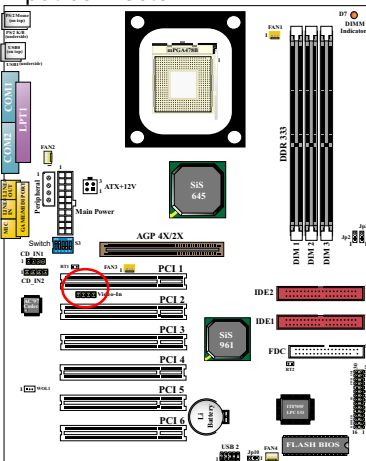


Wake On LAN Connector:


Connect the Wake On LAN signal from WOL1 LAN card to WOL1

### 2-9.3 Connector Video-In

This connector connects to the Video Tuner Card and acts as Audio Input connector.

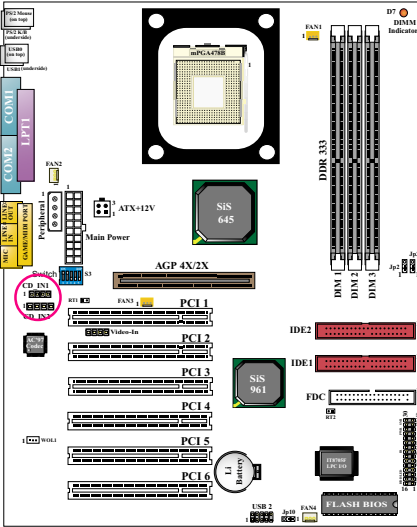


Connector Video-In

1   
 Pin 1 R-Channel  
 Pin 2 GND  
 Pin 3 GND  
 Pin 4 L-Channel

### 2-9.4 CD-ROM Audio Connectors (CD\_In1/CD\_In2)

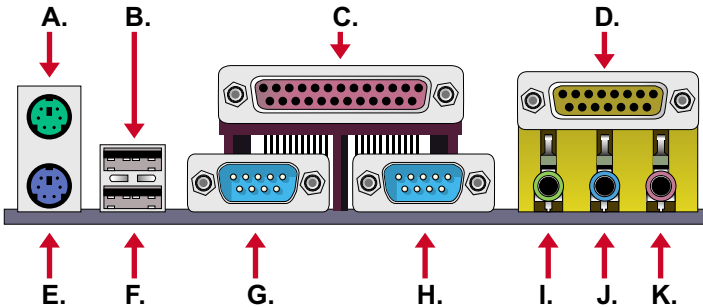
Both CD-In1 and CD-In2 are audio connectors connecting CD-ROM audio to mainboard. Only take notice that Connector CD-In1 is of narrower pin pitch.



CD-ROM Audio Pin Assignment

	Pin 1	Pin 2	Pin 3	Pin 4
1 1 1 1 CD_IN1	GND	Left Channel	GND	Right Channel
1 1 1 1 CD_IN2	Left Channel	GND	GND	Right Channel

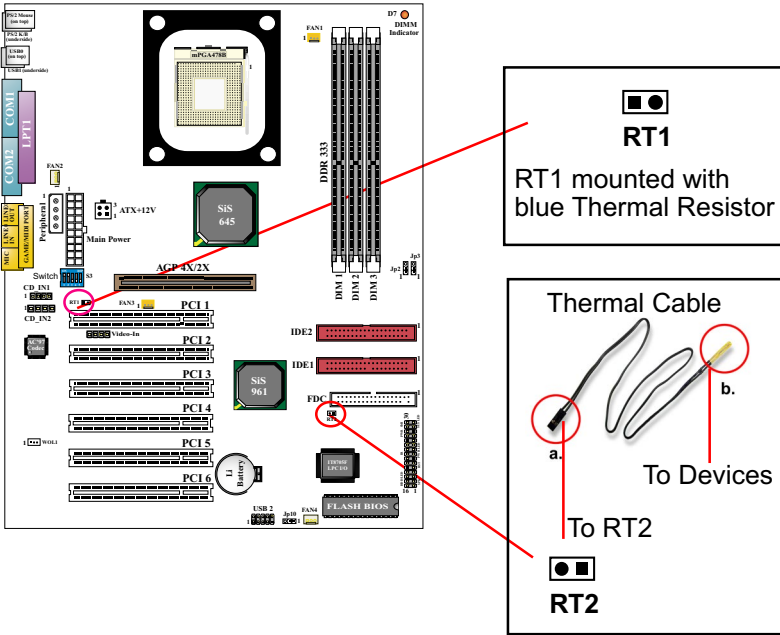
### 2-9.5 Chassis Panel Connectors



- A : PS/2 MOUSE PORT
- B : USB 0 PORT
- C : LPT1 PORT
- D : GAME/MIDI PORT
- E : PS/2 KEYBOARD PORT
- F : USB 1 PORT

- G : COM1 PORT
- H : COM2 PORT
- I : LINE/SPEAKER OUT
- J : LINE IN
- K : MICROPHONE INPUT

### 2-9.6 Thermal Sensor Connectors RT1 and RT2

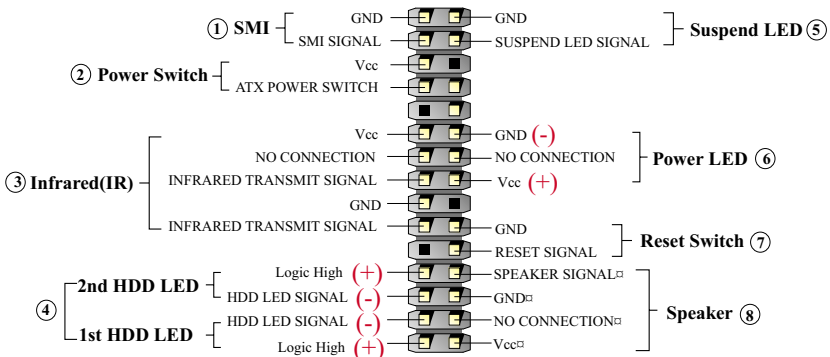
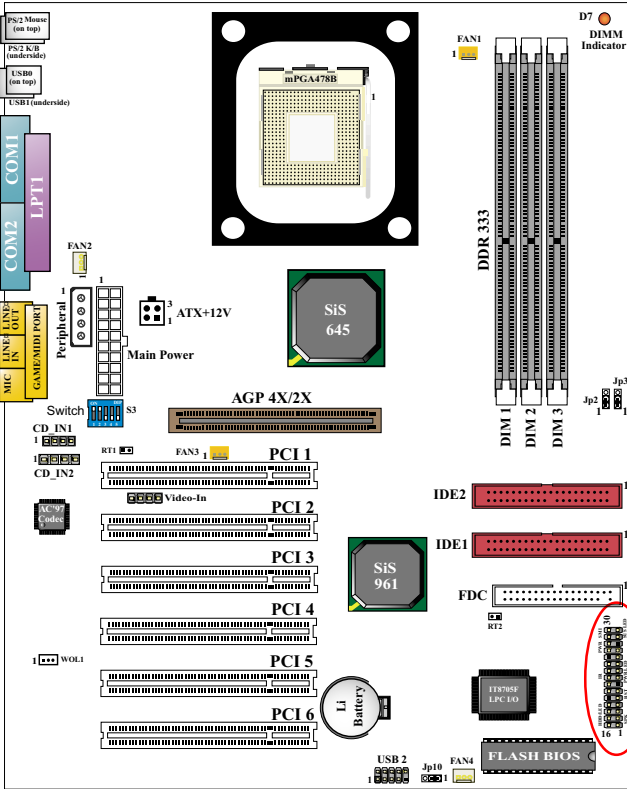


1. Connector RT1: A blue thermal resistor is already soldered to connector RT1 so as to sense the temperature round the mainboard. What RT1 does is to transmit the thermal signal to BIOS or Hardware Monitor.
2. Connector RT2: A thermal cable is needed to connect RT2 to on-board devices such as HDD, Graphics card etc., so as to detect the temperature generated therein. Please connect the end (a) of the thermal cable to mainboard RT2 header, and tape another end (b) of thermal cable on to the device which you want to monitor. After you have finished the thermal cable installation, you will **see the detected temperature in BIOS setup or Hardware monitor utility.**



### 2-9.7 Complex Header

This complex Header consists of 9 connectors providing various supports:

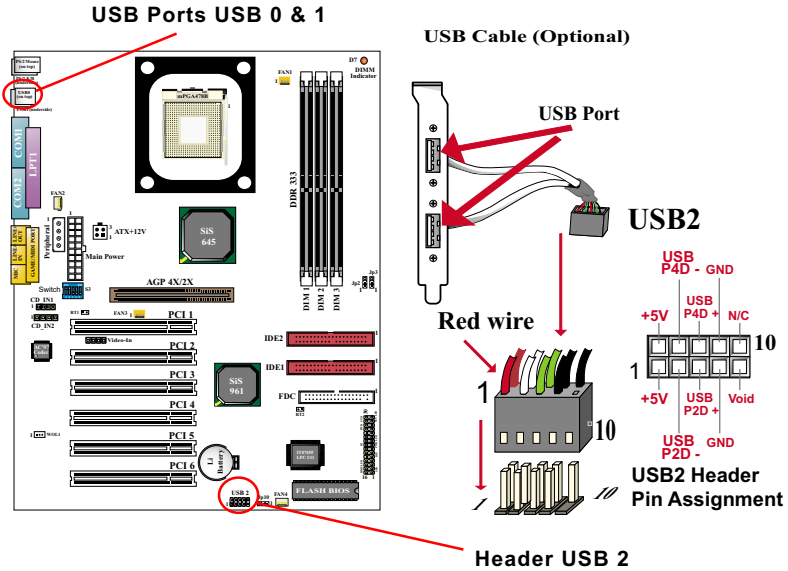


- (1) SMI Connector (System Management Interrupt):**  
Connection: Connected to the case-mounted Suspend Switch.  
Function: Manually selecting system into the Suspend Mode or “Green Mode”.
- (2) Power Switch Connector:**  
Connection: Connected to a momentary button or switch.  
Function: Manually switching the system between “On” and “Soft Off”. Pressing the momentary button for more than 4 seconds will also turn the system off.
- (3) IR Connector (Infrared Connector):**  
Connection: Connected to Connector IR on board.  
Function: Supporting wireless transmitting and receiving module on board.
- (4) 1st HDD LED Connector / 2nd HDD LED Connector:**  
Connection: Connected to HDD LED.  
Function: To supply power to HDD LED.
- (5) Suspend LED Connector:**  
Connection: Connected to Suspend indicator.  
Function: To supply power to “Suspend indicator”.
- (6) Power LED Connector:**  
Connection: Connected to System Power LED.  
Function: To supply power to “System Power LED”.
- (7) Reset Switch Connector:**  
Connection: Connected to the case-mounted “Reset Switch”.  
Function: To supply power to “Reset Switch” and support system reboot function.
- (8) Speaker Connector:**  
Connection: Connected to the case-mounted Speaker.  
Function: To supply power to the case-mounted Speaker.

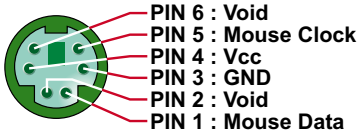
### 2-9.8 USB Ports and USB Header (Header USB 2)

This series of mainboards provides two USB ports USB0 and USB1 on board supporting various USB devices. In addition, one USB header is added on board to provide two additional USB ports by using an additional USB Cable. User can order the additional USB cable from your mainboard dealer or vender.

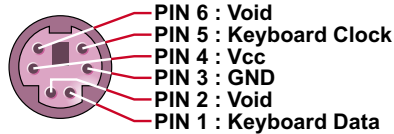
When plugging the USB cable into Header USB2, user must make sure the red wire is connected to Pin 1.



### 2-9.9 PS/2 Mouse And PS/2 Keyboard



**PS/2 MOUSE**



**PS/2 KEYBOARD**

## 2-10 IRQ Description

IRQ	Function Description	Priority
IRQ 0	System Timer	1
IRQ 1	Keyboard Controller	2
IRQ 2	Programmable Interrupt	N/A
IRQ 3	Serial Port (COM 2)	11
IRQ 4	Serial Port (COM 1)	12
IRQ 5	Free	13
IRQ 6	Floppy Disk Controller	14
IRQ 7	Parallel Port (LPT1)	15
IRQ 8	Real Time Clock (RTC)	3
IRQ 9	Free	4
IRQ 10	Free	5
IRQ 11	Free	6
IRQ 12	PS/2 Mouse Port	7
IRQ 13	Coprocessor	8
IRQ 14	Primary IDE Channel	9
IRQ 15	Secondary IDE Channel	10

- Both ISA and PCI expansion cards may require IRQs. System IRQs are available to cards installed in the ISA expansion bus first, then any remaining IRQs are available to PCI cards. Currently, there are two types of ISA cards.
- The original ISA expansion card design, now referred to as “Legacy” ISA card, requires you to configure the card’s jumpers manually and then install it in any available slot on the ISA bus. To see a map of your used and free IRQs in Windows 98, the **Control Panel** in **My Computer**, contains a **System** icon, which gives you a **Device Manager** tab. Double-Clicking on a specific hardware device gives you a **Resources** tab which shows the Interrupt number and address. Double-Clicking **Computers** to see all the interrupts and addresses for your system. Make sure that each ISA device should be assigned to one IRQ respectively. If ISA device share IRQ with any other device, your computer will easily get into trouble.

***MEMO***

# Chapter 3 Software Setup

## Drivers, Utilities and Software Installation

Support CD:

This mainboard is shipped with a Support CD which contains those necessary driver files, Application Softwares and some helpful utilities. It is a user-friendly, auto-run CD which will open itself up in a CD-ROM automatically.

Contents of Support CD:

User will be able to find in the Support CD the following drivers and utilities supported by SiS 645 Chipset:

1. INF;
2. AC'97 Audio Drivers;
3. Hardware Monitor Utility;

This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 9X, Windows ME Windows NT Windows 2000 and Windows XP. The driver installation procedures for all these operating systems are programmed into an auto-run mode. What users have to do is read and follow the pop-up instructions. We herein take the installation on Windows 98 as the general illustration.

The priority of driver installation should also be noted. Users are recommended to take the following installation order:

**3-1 Open Support CD and choose your drivers**

**3-2 Install INF Driver**

**3-3 AC'97 Audio Driver Installation**

**3-4 Hardware Monitor Utility Installation**

### **3-1 Open up Support CD:**

1. Please put the Support CD enclosed in your mainboard package into the CD-ROM drive. In a few seconds, the Main Menu will automatically appear, displaying the contents to be installed for this mainboard:

**Install INF**  
**Install AC'97 Audio Driver**  
**Install Hardware Monitor Utility**  
**Install Acrobat Reader**  
**Browse CD-ROM**  
**Exit**

2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:

D:\Autorun.exe (assuming that your CD-ROM Drive is Drive D)

3. Users are recommended to install all the drivers and utilities at a time though they can be installed separately.  
Also, we should take "INF Driver" as first installation priority to optimize the system.

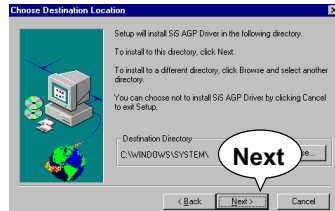
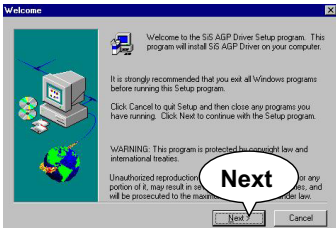
From next section, we provide detailed descriptions of all these installations with graphical illustrations.

### 3-2 Proceed to INF Driver Installation

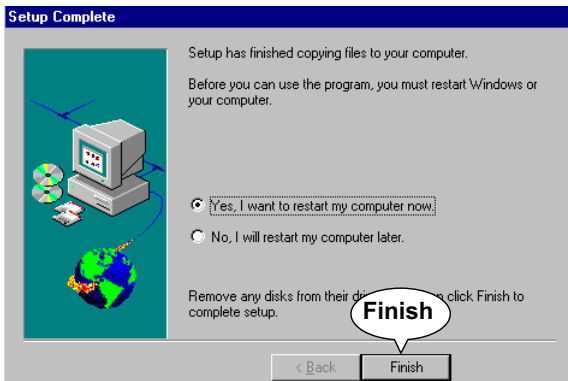
1. Following the procedures of opening the Support CD, click to “ Install INF Driver” to proceed.

2. The SiS AGP Driver Program screen will pop up. Click “Next” button to continue.

3. The Setup Program is now installing the driver into a directory as shown in the Instruction Box. Please click the “Next” button to continue.



4. After all these setup procedures have finished, you should restart your computer by clicking on “Finish” so as to put INF driver into effect and proceed to next driver installation.

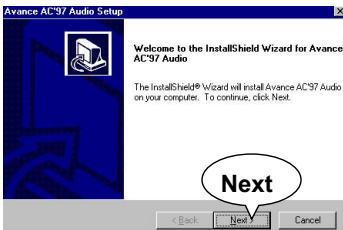




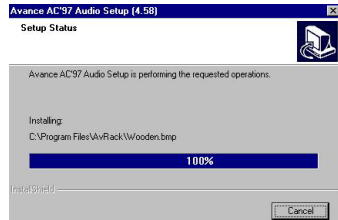
### 3-3 Proceed to AC'97 Audio Driver Installation

1. Following the installation of INF driver, you have to restart system so that your system can be reconfigured with the driver. When restarting procedures finish, please open the Support CD with your CD-ROM to enter the Main Installation Menu. Then click to "Install AC'97 Audio Driver".

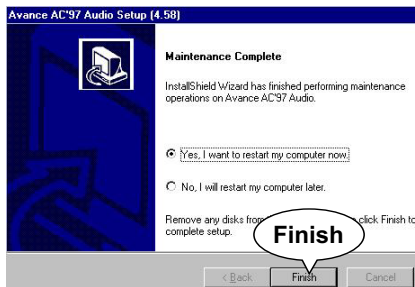
2. The InstallShield Wizard will pop up to guide you to install the Advance AC'97 Audio Driver. Press click "Next" button to continue.



3. Instantly, the Setup Program is installing the Advance AC'97 into a directory as shown in the pop-up screen below:



4. After all these setup procedures have completed, click to "Finish" button to exit the Installation program.



### 3-4 Proceed to Hardware Monitor Installation

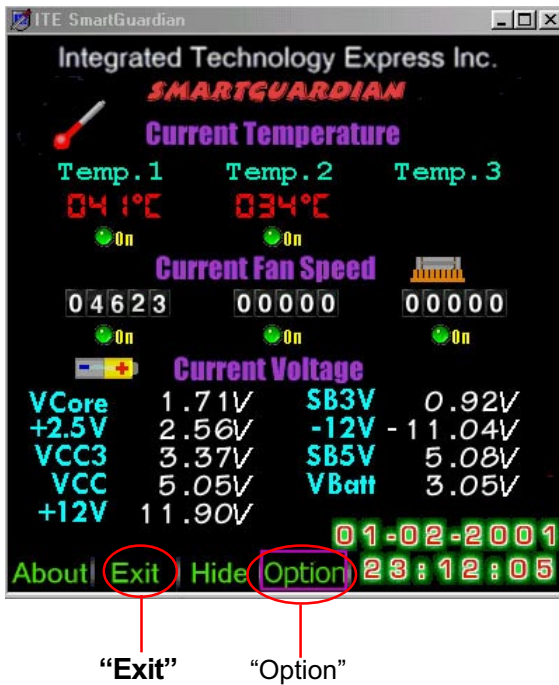
1. Following the installation of AC'97 driver, you may proceed to install Hardware Monitor Utility. Please open the Support CD with your CD-ROM to enter the Main Installation Menu. Then click to "Install Hardware Monitor Utility"
2. Instantly the "ITE SmartGuardian Install" screen pops up. Please click to "Install" to continue.



3. In a few seconds, installation of Hardware Monitor is complete. Please click on the "OK" Dialog Box to finish installation.



4. To display the Hardware Monitor Utility, just click on the “ITE SMART-GUARDIAM” icon in your program file, and the following screen of Smartguardian Control Panel will show up, displaying the information about system temperatures, voltages and Fan speed. Clicking to the “Option” menu of the Control Panel, you can also change some Value settings for your system to optimize its performance.



### Note On Hard Disk DMA Function:

User must enable the DMA function for the DMA HardDisk. The process is as below:

1. [Start] [setting] [Control Panel] [System] [Device Manager].
2. In Device Manager, select [Disk Drivers] [GENERIC IDE TYPEXX].
3. Select [Properties] for GENERIC IDE TYPEXX.
4. In Properties, select [Settings].
5. In Option item, select the DMA checkbox.
6. Restart your computer.

# Chapter 4 BIOS Setup

## THE BIOS

BIOS stands for Basic Input and Output System. It was once called ROM BIOS when it was stored in a Read-Only Memory(ROM) chip Now manufacturers would like to store BIOS in EEPROM which means Electrically Erasable Programmable Memory. BIOS used in this series of mainboard is stored in EEPROM, and is the first program to run when you turn on your computer.

BIOS performs the following functions:

1. Initializing and testing hardware in your computer (a process called "POST", for Power On Self Test).
2. Loading and running your operating system.
3. Helping your operating system and application programs manage your PC hardware by means of a set of routines called BIOS Run-Time Service.

**This Chapter includes the following topics :**

**4-1 About BIOS Setup**

**4-2 To run BIOS Setup**

**4-3 About CMOS**

**4-4 The POST (Power On Self Test)**

**4-5 To upgrade BIOS**

**4-6 BIOS Setup**

## **4-1 About BIOS Setup**

BIOS setup is an interactive BIOS program that you need to run when:

1. Changing the hardware of your system. (For example: installing a new Hard Disk etc.)
2. Modifying the behavior of your computer. (For example: changing the system time or date, or turning special features on or off etc.)
3. Enhancing your computer's behavior. (For example: speeding up performance by turning on shadowing or cache)

## **4-2 To run BIOS Setup**

First access BIOS setup menu by pressing < DEL > key after "POST" is complete ( before OS is loaded ). BIOS will then display the following message:

```
DEL: SETUP
```

## **4-3 About CMOS**

CMOS is the memory maintained by a battery. CMOS is used to store the BIOS settings you have selected in BIOS Setup. CMOS also maintains the internal clock. Every time you turn on your computer, the BIOS Looks into CMOS for the settings you have selected and configures your computer accordingly. If the battery runs out of power, the CMOS data will be lost and POST will issue a "CMOS invalid" or "CMOS checksum invalid" message. If this happens, you have to replace the battery and do some proper settings in BIOS Setup.

## **4-4 The POST ( Power On Self Test )**

POST is an acronym for Power On Self Test. This program will test all things the BIOS does before the operating system is started. Each of POST routines is assigned a POST code, a unique number which is sent to I/O port 080h before the routine is executed.

## 4-5 To upgrade BIOS

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to upgrade BIOS without the need to replace an EPROM component.
- The Upgrade Utility can be loaded on a floppy diskette to execute saving, verifying, and updating the system BIOS. The Upgrade Utility can also be run from a hard disk drive or a network drive.

### 4-5.1 Before Upgrading BIOS

- It is highly recommended that you save a copy of the original mainboard BIOS along with a Flash EPROM Programming utility (AMIFLASH.EXE) to a bootable floppy disk so that you can reinstall the BIOS when needed.

### 4-5.2 Upgrade Process

- Normally, to upgrade BIOS is unnecessary if the system is working fine. Users should only upgrade the BIOS when you experience incompatible problems or need to create new features.
- “AMIFLASH.EXE” is a Flash EPROM Programming utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the mainboard. This program only works in **DOS environment, the utility can not be executed in win95/98, ME, NT WINDOWS 2000 or Windows XP environment.**
- Please follow the steps below for upgrading the system BIOS:

Step 1. Please visit the board maker's website, download latest BIOS file and AMI flash utility “AMIFLASH.EXE”. The BIOS file format will be \*.ROM, of which “\*” stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and AMI flash utility “AMIFLASH.EXE” into the diskette.

Step 3. Insert the diskette into drive A, reboot your system and boot from the diskette.

Step 4. Type **AMIFLASH \*.ROM** and then press <Enter> to run BIOS upgrade program. (\*.ROM depends on your mainboard model and version code. Instead of typing “\*”, you should type specific file name for your specific mainboard).

Step 5. When the message “Flash ROM Update Completed - Pass.” appears, please restart your system.

Step 6. You will see a message “CMOS Memory Size Wrong” during booting the system. Press <Del> or <F1> to run CMOS setup utility, then reload “LOAD SETUP DEFAULTS” or “**Load Optimal Defaults**” and save this change.

## 4-6 BIOS SETUP --- CMOS Setup Utility

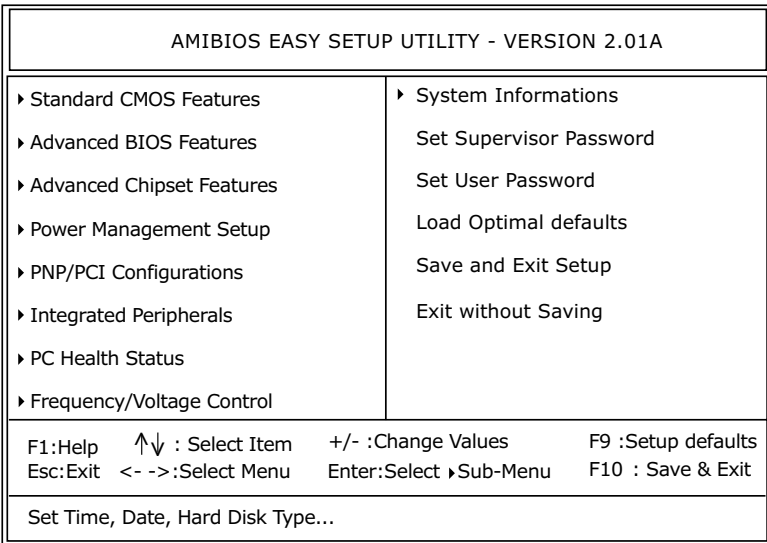
### 4-6.1 CMOS Setup Utility

This mainboard comes with the AMI BIOS from American Megatrends Inc. Enter the CMOS Setup Utility Main Menu by:

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

**PRESS <Del> TO RUN SETUP**

2. Press the <Del> key and the main program screen will appear as follows.



3. Use the arrow keys on your keyboard to select an option, and press <Enter>. Modify the system parameters to reflect the options installed in your system.
4. You may return to the Main Menu anytime by pressing <ESC>.
5. In the Main Menu, "Save & Exit Setup" saves your changes and reboots the system, and "Exit Without Saving" ignores your changes and exits the program.



### 4-6.2 Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. You only need to modify the configuration values of this option if you want to change your system hardware configuration or when the data stored in the CMOS memory gets lost or damaged.

Run the Standard CMOS Setup as follows:

1. Choose "Standard CMOS Setup" from the Main Menu and a screen with a list of options will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 2.01a**

Standard CMOS Features		Setup Help
System Time	00 19 29	
System Date	Dec 05 2001 Wed	
Floppy Drive A	1.44M, 3.5 in.	
Floppy Drive B	Not Installed	
▶ Primary IDE Master	Maxtor 20560 A4	
▶ Primary Slave	Not Installed	
▶ Secondary Master	Not Installed	
▶ Secondary Slave	Not Installed	

F1:Help    ↑↓:Select Item    +/- :Change Values    F9 :Setup defaults  
 Esc :Previous Menu    Enter :Select, Sub-Menu    F10 :Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.
3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

**System Time** The BIOS shows the time of the day in the format: hh:mm:ss. Choose the field with the Arrow keys and change the time with the Page Up/Page Down keys.

**System Date** The BIOS shows the date of the day in the format: mm:dd:yy :day of the Week. Choose the field with the Arrow keys and change the value with the Page Up/Page Down keys.

**Floppy Drive A / Floppy Drive B** Select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:  
 360KB, 5.25 in.  
 1.2MB, 5.25 in.  
 720KB, 3.5 in.  
 1.44MB, 3.5 in.  
 2.88MB, 3.5 in.  
 Not Installed

**Primary/Secondary IDE Master/Slave** Press Enter on any one of these four items will reveal the following submenu for your configuration of the hard Disk you have installed:

Primary IDE Master :Maxtor 82560 A4		Setup Help
Type	Auto	
Cylinders	4962	
Heads	16	
Write Precompensation		
Sectors	63	
Maxium Capacity	2561 Mb	
LBA Mode	On	
Black Mode	On	
Fast Programmed I/O Modes	4	
32 Bit Transfer Mode	On	

**Type** This option shows the types of configuration for the IDE devices:

1-50: Predefined types

USER: set Parameters by User

Auto: Set parameters automatically

CD-ROM: Use for ATAPI CD-ROM drives

Double click [Auto] to set all HDD parameters automatically, including “Cylinders, Heads, Write Precompensation, Sectors, Maximum Capacity and 32 Bit Transfer Mode.

### 4-6.3 Advanced BIOS Features

Advanced BIOS Features improves your system performance or sets up system features according to your preference.

Run the Advanced BIOS Features as follows:

1. Choose “Advanced BIOS Features” from the Main Menu and a screen with a list of options will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 2.01a**

Advanced BIOS Features	Setup Help
Quick Boot	Enabled
Pri Master ARMD Emulated as	Auto
Pri Slave ARMD Emulated as	Auto
Sec Master ARMD Emulated as	Auto
Sec Slave ARMD Emulated as	Auto
Delay for Hard Drive (Sec.)	2
1st	Floppy: 1.44 MB 3.5
2nd	Disabled
3rd	IDE-0 :Maxtor 20560 A4 -
Try Other Boot Devices	Yes
Floppy Access Control	Read-Write
Hard Disk Access Control	Read-Write
S.M.A.R.T for Hard Disks	Disabled
Bootup Num-lock	On
Primary Display	VGA/EGA
Password Check	Setup
Boot To OS/2	No
Internal Cache	WriteBack
External Cache	WriteBack
System BIOS Cacheable	Enabled
C000,32K Shadow	Cached
C800,16K Shadow	Disabled
CC00,16K Shadow	Disabled
D000,16K Shadow	Disabled
D400,16K Shadow	Disabled
D800,16K Shadow	Disabled
DC00,16K Shadow	Disabled

F1:Help    ↑↓:Select Item    +/- :Change Values    F9 :Setup defaults  
 Esc :Previuos Menu    Enter :Select, Sub-Menu    F10 :Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.

<F9>: Setup BIOS default values.

<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide.

- 
- Quick Boot** Allows you to Enable / disable quick boot of your system.
- Pri / Sec Master / Slave ARMD Emulated as** Allows you to Enable drive emulation.  
Choices: Auto; Floppy; Hard Disk
- Delay for Hard Drive (Sec.)** Allows you to set the delay time for hard drive access.  
Choices: Disabled; 1~10 sec. (Default: 2)
- 1st/2nd/3rd Boot Device** Allows you to set floppy or IDE devices already installed to be the 1st/2nd/3rd boot device.
- Try Other Boot Devices** Allows you to enable/disable system to try to boot with other boot devices.  
Choices: Yes; No
- Floppy Access Control** Allows you to to set floppy access control.  
Choices: Read Only; Read-Write

- Hard Disk Access Control** Allows you to set hard disk access control.  
Choices: Read only; Read-Write
- S.M.A.R.T. for Hard Disks** Allows you to Enable / disable the Self Monitoring Analysis and Reporting Technology for the hard Disk.  
Choices: Enabled; Disabled
- BootUp Num-Lock** Allows you to Toggle between On or Off to control the state of the NumLock key when the system boots. If On, the numeric keypad is in numeric mode. If off, the numeric keypad is in cursor control mode.
- Primary Display** Allows you to choose the primary display for the system.  
Choices: VGA/EGA (default); CGA40x25; CGA80x25; Mono; Absent
- Password Check** Allows you to set BIOS to check up password with a password prompt at BIOS Setup or whenever re-starting system.  
Choices: Setup; Always
- Boot to OS/2** Allows you to set your system to OS/2 operating system.  
Choices: Yes; No (default)
- Internal /External Cache** Allows you to set the Internal/External Cache Mode.  
Choices: WriteBack (default); WriteThru; Disabled
- System BIOS Cacheable** Allows you to Enable / disable the System BIOS Cacheable function.
- C000, 32K Shadow** Allows you to set these addresses cached, Enabled or Disabled. Default: Cached
- C800,CC00,D000,D400, D800,DC00 16K Shadow** Allows you to set these addresses cached, Enabled or Disabled. Default: Disabled

### 4-6.4 Advanced Chipset Features

Advanced Chipset Features is used to modify the values of chipset buffers. These buffers control the system options.

Run the Advanced Chipset Features as follows:

1. Choose "Advanced Chipset Features" from the Main Menu and a list of option will appear:

AMIBIOS EASY SETUP UTILITY - VERSION 2.01a

Advanced Chipset Features		Setup Help
Graphic Win Size	64M	
DRAM CAS# Latency	2.5T	
Timing Setting Mode	Normal	
Ma 1T/2T Select	Auto	
Advanced Read Prefetch	Enabled	
APIC Select	Disabled	
USB0 Access Interface	Fast Embedded Bus	
USB1 Access Interface	Fast Embedded Bus	
IDE Access Interface	Fast Embedded Bus	

F1:Help    ↑↓:Select Item    +/- :Change Values    F9 :Setup defaults  
 Esc :Previous Menu    Enter :Select ▾,Sub-Menu    F10 :Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.

<F9>: Setup BIOS default values.

<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

**DRAM CAS# Latency** Allows you to set the latency period of the Column Address Strobe of the DRAM.  
Choices: 2T; 2.5T; 3T

**Timing Setting Mode** Allows you to set the latency mode of DRAM.  
Choices: Safe; Normal; Fast; Turbo; Ultra

**MA 1T/2T Select** Allows you to select the MA 1T mode or MA 2T Mode..  
Choices: Auto (default); MA 1T; MA 2T

**Advanced Read Prefetch** Allows you to Enable / Disable the memory read prefetch function..  
Choices: Enabled; Disabled

**APIC Select** Allows you to enable / disable the APIC function.  
Default: Disabled

**USB0/USB1/IDE Access Interface** Allows you to select between PCI Bus and Fast Embedded Bus for the USB and the IDE Interfaces.  
Choices: PCI Bus; Fast Embedded Bus

---



### 4-6.5 Power Management Setup

Power Management Setup allows you to set the system’s power saving functions.

Run the Power Management Setup as follows:

1. Choose “Power Management Setup” from the Main Menu and a list of options will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 2.01a**

Power Management Features		Setup Help
Power Switch Type	On/Off	
ACPI Aware O/S	Yes	
ACPI Standby State	S1	
Initialize VGA BIOS By S3	Enabled	
Power Management	Enabled	
Suspend Time Out	Disabled	
Hard Disk Time Out	Disabled	
RTC Alarm Resume from Soft Off	Disabled	
RTC Alarm Date	Every Day	
RTC Alarm Hour	12	
RTC Alarm Minute	30	
RTC Alarm Second	00	
Resume On Modem Ring	Enabled	
Resume On PS2 Mouse	Disabled	
Keyboard PowerOn Function	Any Key	
Restore on AC/Power Loss	Power Off	

F1:Help    ↑↓:Select Item    +/- :Change Values    F9 :Setup defaults  
 Esc :Previous Menu    Enter :Select , Sub-Menu    F10 :Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: “Help” gives options available for each item.

<F9>: Setup BIOS default values.

<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

- Power Switch Type** Allows you to select the type of Power Switch.  
Choices: On/Off; Suspend
- ACPI Aware O/S** Select Yes for Windows systems supporting ACPI.  
Select No for windows systems not supporting ACPI.
- ACPI Standby State** This item allows you to select the ACPI Suspend type. You can select S3(STR) for suspending to DRAM if your system supports this mode. Or you can select S1 (POS) for Power on Suspend under Windows 98 ACPI mode..
- Initialize VGA BIOS by S3** Allows you to enable / disable the VGA BIOS by S3 function.
- Power Management** Allows you to enable / disable the Power management function.
- Suspend Time Out** Allows you to enable / disable the Suspend Time Out function( low power mode) when no activity occurs during Suspend time.
- HDD Time Out** Allows you to enable / disable the HDD Time Out function( low power mode) when no activity occurs in HDD during Suspend time.  
When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
- RTC Alarm Resume From Soft Off** Allows you to enable / disable the RTC Alarm Resume function. If enabled, the following items are allowed to set the date and time of resume:  
RTC Alarm Date  
RTC Alarm Hour  
RTC Alarm Minute  
RTC Alarm Second

**Resume on Modem Ring** Allows you to enable / disable the Resume on Modem Ring Signal function.

An input signal on the serial Ring Indicator (RI) Line (in other words, an incoming call on the modem) Awakens the system from a soft off state.

**Resume on PS2 Mouse** Allows you to enable / disable the Resume on PS2 Mouse function.

**Keyboard Power On Function** Allows you to enable / disable the Keyboard Power On function.

**Restore on AC/Power Loss** Allows you to set the Restore state.  
Choices: Power Off; Power On; Last State

## 4-6.6 PNP / PCI Configuration

PNP/PCI Configuration allows you to modify the system's power saving functions.

Run the PNP/PCI Configuration as follows:

1. Choose "PNP/PCI Configuration" from the Main Menu and a screen with a list of options will appear:

### AMIBIOS EASY SETUP UTILITY - VERSION 2.01a

PNP/PCI Configurations	Setup Help
Plug and Play Aware O/S	No
DMA Channel 1	PnP
DMA Channel 3	PnP
DMA Channel 5	PnP
DMA Channel 6	PnP
DMA Channel 7	PnP
IRQ3	PCI/PnP
IRQ4	PCI/PnP
IRQ5	PCI/PnP
IRQ7	PCI/PnP
IRQ9	PCI/PnP
IRQ10	PCI/PnP
IRQ11	PCI/PnP
IRQ14	PCI/PnP
IRQ15	PCI/PnP
PCI IRQ Line 1	Auto
PCI IRQ Line 2	Auto
PCI IRQ Line 3	Auto
PCI IRQ Line 4	Auto
PCI IRQ Line 5	Auto
PCI IRQ Line 6	Auto

F1:Help    ↑↓:Select Item    +/- :Change Values    F9 :Setup defaults  
 Esc :Previous Menu    Enter :Select    Sub-Menu    F10 :Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.

<F9>: Setup BIOS default values.

<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

**Plug & Play aware O/S** Select Yes for Windows systems supporting Plug and Play function. Select No for systems not supporting PNP.

**DMA Channel 1/3/5/6/7** Allows you to set DMA Channels either for PnP or ISA/EISA bus.

**IRQ3/4/5/7/9/10/11/14/15** Allows you to set IRQs either for PCI/PnP or ISA/EISA bus.

**PCI IRQ Line1/2/3/4/5/6** Allows you to set 6 specific lines of IRQ for PCI slots. Choices: Auto; 3; 4; 5; 7; 9; 10; 11

### 4-6.7 Integrated Peripherals

Integrated Peripherals option allows you to get some information inside your system when it is working.

Run the Integrated Peripherals as follows:

1. Choose “Integrated peripherals” from the Main Menu and a list of options will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 2.01a**

Integrated Peripherals	Setup Help
Audio Device	Enabled
USB Function	Enabled
USB KB/Mouse/FDD Legacy Support	Enabled
OnBoard FDC	Auto
OnBoard Serial PortA	Auto
OnBoard Serial PortB	Auto
Serial Port2 Mode	Normal
OnBoard Parallel Port	Auto
Parallel Port Mode	EPP+ECP
Parallel Port IRQ	Auto
Parallel Port DMA	Auto
OnBoard Game Port	201h
OnBoard MIDI Port	300h
MIDI Port IRQ	10
OnBoard PCI IDE	Both
Primary Master Prefetch	Enabled
Primary Slave Prefetch	Enabled
Secondary Masterr Prefetch	Enabled
Secondary Slave Prefetch	Enabled

F1:Help    ↑↓:Select Item    +/- :Change Values    F9 :Setup defaults  
 Esc :Previous Menu    Enter :Select    ▶Sub-Menu    F10 :Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: “Help” gives options available for each item.

<F9>: Setup BIOS default values.

<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

- Audio Device** Allows you to enable /disable Audio Device on board.  
The choices: Enabled; Disabled
- USB Function** Allows you to enable /disable USB Function on board.  
The choices: Enabled; Disabled
- USB KB/Mouse/FDD Legacy Support** If USB Function is Enabled, this option appears to Allow you to enable /disable these USB functions.  
The choices: Enabled; Disabled
- OnBoard FDC** Allows you to enable /disable Floppy Disk Drive on board.  
The choices: Auto; Enabled; Disabled
- OnBoard Serial PortA/ PortB** Allows you to set Serial Port on board.  
Select a logical COM port name and matching address for the first and second serial ports.  
Select an address and corresponding interrupt for the first and second serial ports.  
The choices: Auto; Disable; 3F8h/COM1; 2F8h/COM2; 3F8h/COM3; 2F8h/COM4
- Serial Port2 Mode** Allows you to set serial Port 2 Mode.  
The choices: Normal; IrDA; ASKIR
- OnBoard Parallel Port** Allows you to configure parallel port on board.  
The choices: Auto; Disabled; 378h; 278h; 3BCh
- Parallel Port Mode** If Parallel Port is not disabled, this option allows you to configure parallel port mode.  
The choices: SPP; EPP; ECP; EPP+ECP
- Parallel Port IRQ/DMA** If Parallel Port is set 378h, this option allows you to configure parallel port IRQ/DMA.  
The choices: 5/7 for IRQ; 0/1/3 for DMA
- OnBoard Game Port** Allows you to configure Onboard Game port address.  
The choices: Disabled; 201h; 209h

**OnBoard MIDI Port** Allows you to configure onboard MIDI port .  
The choices: Disabled; 300h; 330h

**MIDI Port IRQ** If the onboard MIDI port is set at 300h or 380h, this item appears to allow you to configure the MIDI Port IRQ.  
The choices: 5; 10; 11

**Onboard PCI IDE** Allows you to enable / disable the PCI IDE prefetch function.  
The choices: Disabled; Primary; Secondary; Both

**Primary/Secondary Master/Slave Prefetch** If you choose Both for the Onboard PCI IDE option, these items will appear to allow you to enable / disable the PCI IDE prefetch function.



### 4-6.8 PC Health Status

This menu helps you to read only and get more information on the working CPU temperature, FAN speed and voltage.

1. Choose “PC Health Status” from the Main Menu and a screen with a list of current status of your working system will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 2.01a**

PC Health Status		Setup Help
Vcore	V	
Vcc2.5v	V	
Vcc3	V	
Vcc	V	
+12V	V	
-12V	V	
SB5V	V	
VBAT	V	
Power Fan Speed	RPM	
System Fan Speed	RPM	
CPU Fan Speed	RPM	
Power Temperature	°C/°F	
System Temperature	°C/°F	
CPU Temperature	°C/°F	

2. Press <ESC> to return to the Main Menu. in case any irregular reading appears about your system, it indicates that a problem exists therein. To solve the problem, a hardware professional or your dealer is recommended.

**Vcore** Shows CPU core actual voltage value.

**Vcc2.5V/Vcc3** Shows actual voltage value against the default voltage 2.5V.

**Vcc** Shows power supply actual voltage value.

**+12V/-12V** Shows current voltage against the +12V/-12V power supply.

**SB5V** Shows current voltage against the SB5V power supply.

**VBAT** Shows current voltage against battery power supply.

**Power/System/CPU FAN Speed** These fields display the current speed of the Power / System / CPU fan.

**Power/System/CPU Temperature** Shows current Power / System / CPU temperature.

### 4-6.9 Frequency/Voltage Control

Run the “Frequency/Voltage Control” as following:

1. Choose “Frequency/Voltage Control” from the Main Menu and a screen with a list of options will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 2.01a**

Frequency/Voltage Control		Setup Help
CPU/DRAM Base Frequency	100/100MHz	
CPU Multiple Factory	H/W TRAP0	
Host Frequency	100MHz	
DRAM Frequency	100MHz	

F1:Help    ↑↓:Select Item    +/- :Change Values    F9 :Setup defaults  
Esc :Previous Menu    Enter :Select ▾ Sub-Menu    F10 :Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: “Help” gives options available for each item.

<F9>: Setup BIOS default values.

<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

**CPU /DRAM Base Frequency** This item allows you to choose the CPU/DRAM Base Frequency. If CPU/DRAM could not be adjusted, your CPU and DRAM is locked by default, H/W Trap (Hardware Trap)will appear as the option.  
Choices: H/W Trap; 66/66MHz; 100/100MHz;  
100/133MHz; 100/150MHz;  
100/166MHz; 100/200MHz;  
133/100MHz; 133/133MHz;  
133/166MHz

**Host/DRAM Frequency** These items will appear to show the Host / DRAM frequency once you choose an option in CPU/DRAM Base Frequency item.

**CPU Multiple Frequency** This item allows you to choose the CPU Multiplier. If CPU multiplier is locked by default, Trap (Hardware Trap)will appear as the option.  
Choices: H/W Trap; 8.0 ~ 24.0 in 1.0 stepping

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### 4-6.10 System Information

This menu helps you to read only and get more information on the working system.

1. Choose “System Information” from the Main Menu and a screen with a list of current status of your working system will appear:

AMIBIOS EASY SETUP UTILITY - VERSION 2.01a

System Information		Setup Help
BIOS Version	12/05/01	
Processor Speed	1500MHZ	
Total Memory	128MB	
Cache Size	256KB	
Memory Bank 0	SDRAM	
Memory Bank 1	None	
Memory Bank 2	None	

2. Press <ESC> to return to the Main Menu. in case any irregular reading appears about your system, it indicates that a problem exists therein. To solve the problem, a hardware professional or your dealer is recommended.

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**BIOS Version** Shows the BIOS Version on board.

**Processor Speed** Shows actual actual working CPU Speed.

**Total memory** Shows the total system memory working on board.

**Cache size** Shows the actual cache size in CPU.

**Memory Bank 0/1/2** Shows the actual memory Bank working on board.

#### 4-6.11 Set Supervisor / User Password

These two options allow you to set your system passwords. Normally, the Supervisor Password should be set up first before you could go to set up the User Password. :

1. Choose “Set Supervisor Password” in the Main Menu and press <Enter>. Then the following message appears:

[ Enter new supervisor password ]

2. The first time you run this option, enter your password up to 8 characters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears prompting you to confirm the password:

[ Retype new supervisor Password ]

4. Enter the same password “exactly” the same as you have just typed to confirm the password and press <Enter>.
5. The following message appears to confirm the new password setup.

[ New supervisor password installed ]

6. Then choose “Advanced BIOS Features” of the main menu, and roll your cursor to the item “Password Check”, so that you can set the new password to Always (System) or Setup (BIOS) only.
7. After you have made your choice for the new password, you can now set up the User Password from the Main Menu. Choose “Set User Password” in the Main Menu and press <Enter>.
8. When the following message appears, enter your new user password in the dialog box and then press <Enter>:

[ Enter new user password ]

9. After pressing <Enter>, the following message appears to prompt you to confirm the new password and press <Enter>:

[ Retype new user password ]

10. After pressing <Enter>, the following message appears to confirm the new user password.

[ New user password installed ]

11. Move the cursor to Save & Exit Setup to save the password.
12. If you need to delete the password entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you have entered before.
13. Move the cursor to Save & Exit Setup to save the option you have just configured; otherwise the old password will still be there the next time you turn your system on.
14. Press <Enter> to exit to the Main Menu.

**NOTE:** If you forget or lose the password, the only way to access the system is to clear the CMOS RAM. All setup informations will be lost and you need to run the BIOS setup program again.

### 4-6.12 Load Optimized Defaults

When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

[ Load Optimal Defaults ]  
Press [Enter] to continue  
or [ESC] to abort

Press <Enter> now to load Optimal ualues for all the Setup options.

### 4-6.13 Save & Exit Setup

Save & Exit Setup allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and the following message appears:

[ Saving current settings and exit ]  
Press [Enter] to continue  
or [ESC] to abort

Press <Enter> key to save the configuration changes and exit CMOS Setup to restart your system.



#### **4-6.14 Exit Without Saving**

Exit Without Saving option allows you to exit the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and the following message appears:

[ Quit Without Saving Changes ]  
Press [Enter] to continue  
or [ESC] to abort

Follow the message and press <Enter> key to exit CMOS Setup and retart system.

**MEMO**

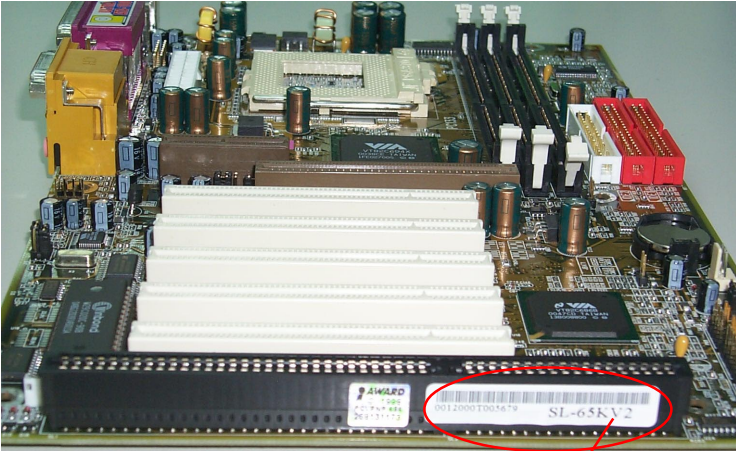
# **APPENDICES**

**Appendix-1 Identifying Mainboard Model  
Number**

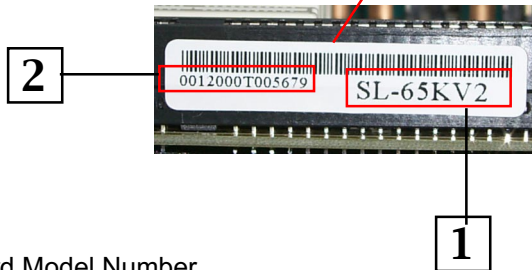
**Appendix-2 Technical Terms**

## Appendix-1 Identify Mainboard Model Number

Usually the mainboard model number is labeled on the side of ISA side of slot or PCI slot. Please see pictures below as an illustration:



Pictures shown hereby are taken as an example only and may not be of the same model as your mainboard.)



1. Mainboard Model Number  
example: SL-65KV2
2. Mainboard Serial Number  
example: 0012000T005679

## **Appendix-2 Technical Terms**

### **AC'97**

AC'97 is a device designed to include a digital processor for modem and an audio CODEC for analog I/O. These two parts are linked together by AC'97 link bus. Putting the digital processor into the main system chipset will reduce the cost of sound/modem onboard solution.

### **ACPI (Advanced Configuration & Power Interface)**

ACPI is developed together by Intel, Microsoft and Toshiba. This interface provides a channel of management of the PC system and its hardware such as CPU and BIOS, pushing the PC power management to a more advanced and user-friendly level.

### **AGP (Accelerated Graphic Port)**

AGP is a bus interface targeted for high-performance 3D graphics. AGP takes advantage of both rising and falling edge of the 66MHz clock. For 2X AGP, the data transfer rate is  $66\text{MHz} \times 4\text{byte} \times 2 = 528\text{MB/s}$ . AGP 4X mode is  $66\text{MHz} \times 4\text{byte} \times 4 = 1056\text{MB/s}$ .

### **AMR (Audio/Modem Riser)**

AMR is an interface to connect the CODEC circuit of AC'97 sound/modem solution to the mainboard through an AMR card and an AMR connector.

### **APM (Advanced Power Management)**

APM is developed by Intel and Microsoft, intending for PC power management through the system BIOS. Through APM, the PC power consumption can be reduced to 5W or lower.

### **ATA (AT Attachment), ATA/66, ATA/100**

ATA is the specification of disk drive interface, that integrates the controller on the disk drive itself with the IDE technology.

ATA/66 uses both rising edge and falling edge to provide a data transfer rate  $16.6\text{MB/s} \times 4 = 66\text{MB/s}$ . To use ATA/66, you need special ATA/66 IDE cable.

ATA/100 also uses both rising edge and falling edge as ATA/66, but clock cycle time is reduced to 40ns. The data transfer rate is  $(1/40\text{ns}) \times 2 \text{ bytes} \times 2 = 100\text{MB/s}$ . To use ATA/100, you need special 80-wire IDE cable, the same as ATA/66.

### ATAPI (AT Attachment Packet Interface)

This is the extension of the EIDE (extended IDE) that enables the interface to support CD-ROM players and tape drives.

### BIOS (Basic Input/Output System)

BIOS is a set of assembly routine/program that resides in EPROM or Flash ROM. BIOS controls input/output devices and other hardware devices of the mainboard. Generally, operation system and drivers will access BIOS before accessing hardware devices so as to enhance the portability of the hardware devices.

### Bus Master IDE (DMA mode)

An IDE interface is an interface for mass storage devices, in which the controller is integrated into the disk or CD-ROM itself. To reduce the workload of the CPU, the bus master IDE device transfers data from/to memory without interrupting CPU, and releases CPU to operate concurrently while data is transferring between memory and IDE device. You need the bus master IDE driver and the bus master IDE HDD to support bus master IDE mode.

### CAS (Column Address Strobe)

CAS is a technology of DRAM writes and reads. The number of clock cycles of the CAS signals is depending on the DRAM timing.

### CMOS Chip (Complementary Metal Oxide Semiconductor Chip)

CMOS Chip is built on CMOS Technology, by which CMOS Chip can store data with very slow power supply.

### CNR (Communication and Networking Riser)

CNR interface provides a cost reducing method of implementing LAN, home networking, DSL, USB, wireless, audio and modem subsystems through a CNR card and a CNR connector.

### CODEC (Coder and Decoder)

Normally, CODEC means a circuit that can do digital to analog conversion and vice versa. It is part of AC'97 sound/modem solution.

### DDR (Double Data Rated) SDRAM

DDR SDRAM essentially doubles the memory speed of SDRAMs without increasing the clock frequency.

**DIMM (Dual In Line Memory Module)**

DIMM socket is built with a 168-pin assignment and supports 64-bit data. DIMM can be single or double sided. The golden finger signals on each side of the module are different, and that is why it is called Dual In Line. Almost all DIMMs are made with SDRAM now, which operate at 3.3V. Some old DIMMs are made by FPM/EDO and only operate at 5V.

**DMA (Direct Memory Access)**

Channel for communications between memory and surrounding devices.

**ECC (Error Checking and Correction)**

The ECC algorithm has the ability to detect double-bit error and automatically correct single-bit error while parity mode can only detect single-bit error.

**ECP (Enhanced Communication Port)**

ECP is a technology designed to improved I/O for parallel ports.

**EPP (Enhanced Parallel Port)**

EPP is a standard that supports data transfer rates of up to 500 kps for parallel printers

**EDO (Extended Data Output) Memory**

Unlike traditional FPM (Fast Page Mode) memory that tri-states the memory output data to start the pre-charge activity, EDO DRAM holds the memory data valid until the next memory access cycle, which is similar to pipeline effect in reducing one clock state.

**EEPROM (Electronic Erasable Programmable ROM)**

Both EEPROM and Flash ROM can be re-programmed by electronic signals, but the interface technology is different. Size of EEPROM is much smaller than flash ROM. BIOS is now generally stored in EEPROM or Flash ROM.

**EPROM (Erasable Programmable ROM)**

Traditional mainboard stores BIOS codes in EPROM which can only be erased by ultra-violet (UV) light. If BIOS has to be updated, you need to remove EPROM from mainboard, clear data by UV light, re-program, and then insert it back to socket.

**FC-PGA (Flip Chip-Pin Grid Array)**

FC means Flip Chip, while FC-PGA is a new package of Intel for Pentium III CPU. It is compatible with SKT370 socket, but requires

mainboard to add some signals on socket 370.

### Flash ROM

Flash ROM can be re-programmed by electronic signals. It is easier for BIOS to upgrade by a flash utility, but it is also easier to be infected by virus. Because of increase of new functions, BIOS size is increased from 64KB to 256KB (2M bit) or more.

### FSB (Front Side Bus)

FSB is the data channel connecting the Processor to chipset, RAM, mainboard buses, AGP socket etc. Its speed is in terms of MHz and is talked to as FSB clock:

FSB Clock means CPU external bus clock.

CPU internal clock = CPU FSB Clock x CPU Clock Ratio

### IEEE 1394

IEEE 1394 is a low-cost digital transfer interface with transfer rate at 100, 200 or 400 Mbps. It provides solutions of connecting digital television devices and Serial Bus Management. There are two type of IEEE 1394 data transfer: asynchronous and isochronous. Isochronous data channels provide guaranteed data transport at a pre-determined rate. This is especially important for time-critical multimedia data where just-in-time delivery eliminates the need for costly buffering.

### Parity Bit

The parity bit mode of error detection uses 1 parity bit for each byte. Normally it is even parity mode, that is, each time the memory data is updated, parity bit will be adjusted to have even count “1” for each byte. Next time when memory is read with odd number of “1”, the parity error is occurred and this is called single bit error detection.

### PC-100 DIMM

SDRAM DIMM that supports 100MHz CPU FSB bus clock.

### PC-133 DIMM

SDRAM DIMM that supports 133MHz CPU FSB bus clock.

### PC-1600 or PC-2100 DDR SDRAM

PC-1600 DDR SDRAM with a 64-bit data bus doubles the data transfer rate of PC100 SDRAM and hence provides data transfer bandwidth up to  $100 \times 64 / 8 \times 2 = 1600 \text{MB/s}$ . PC2100 DDR SDRAM doubles the data transfer rate of PC-133 and hence provides data transfer bandwidth up to  $133 \times 64 / 8 \times 2 = 2100 \text{MB/s}$ .

### PCI (Peripheral Component Interface) Bus



A high speed data channel for the internal connection of peripheral devices and the computer system through a PCI expansion card.

#### PnP (Plug and Play)

The PnP specification suggests a standard register interface for both BIOS and operating system (such as Windows 95). These registers are used by BIOS and operating system to configure system resource and prevent any conflicts. PnP BIOS or operating system will automatically allocate the IRQ/DMA/Memory. Currently, almost all the PCI cards and most ISA cards are already PnP compliant.

#### POST (Power-On Self Test)

The BIOS self-test procedure after power-on. It is generally the first or the second program shown on your monitor screen during system boot.

#### RAID (Redundant Array of Independent Disks)

A group of hard disks set up in PC system for data fault tolerance and better performance. RAID is usually more used in servers than in personal computers. Different level of RAID stands for different function and performance:

Level 0 provides data striping or spreading out blocks of files across multiple disks, and so improvement of performance but no fault tolerance.

Level 1 provides disk mirroring, and so data backup.

Level 3 provides a dedicated disk for error correction of data, and so better performance and some fault tolerance.

#### RAS (Row Address Strobe)

RAS is a technology that DRAM writes and reads to the Row addresses, while a CAS (Column Address Strobe) signal is used to validate the column address. The signals are generally sent CAS before RAS.

(in Network field, RAS stands for Remote Access Services).

#### RDRAM (Rambus DRAM)

Rambus DRAM is a memory technology that uses large burst mode data transfer of up to 1.6GHz. It is import to know that RDRAM technology helps set up a system level improvement, not just a component upgrade.

#### RIMM (Rambus Inline Memory Module)

RIMM is built with a 184-pin architecture module that supports RDRAM memory technology. A RIMM memory module may contain up to maximum of 16 RDRAM devices.

### SDRAM (Synchronous DRAM)

SDRAM is one of the Dynamic Random Access Memory (DRAM) technologies that allow DRAM to use the same clock as the CPU host clock (EDO and FPM are asynchronous and do not have clock signal). SDRAM comes in 64-bit 168-pin DIMM and operates at 3.3V.

### SIMM (Single In Line Memory Module)

SIMM socket is only 72-pin, and is only single side. The golden finger signals on each side of PCB are identical. That is why it is called Single In Line. SIMM is made of FPM or EDO DRAM and supports 32-bit data. SIMM is phased out in current mainboard design.

### SPD (Serial Presence Detect)

SPD is a small ROM or EEPROM device resided on the DIMM or RIMM. Memory module information such as DRAM timing and chip parameters can be stored into SPD so that BIOS can access it and use it to decide best timing for this DIMM or RIMM.

### UART (Universal Asynchronous Receiver/transmitter)

UART is built in a chip that controls the data sent to and received from a serial port. A 16550 UART is now standard in most PCs, and supports modem speed up to 57,600 bps and beyond and direct connect speed of 115,200 bps. Many UARTs have built-in errors in the internal code and just do not work correctly with many external modems. UART is also found as the serial interface on internal modem.

### Ultra DMA

Ultra DMA (or, more accurately, Ultra DMA/33) is a protocol for transferring data at 33.3MB/s between a hard disk drive through the computer's data path (or bus) to the computer's random access memory (RAM). The transfer data is twice as fast as the previous Direct Access Memory (DMA) interface. The latest Ultra DMA has advanced to Ultra DMA/66 and Ultra DMA/100.

16.6MB/s x2 = 33MB/s

16.6MB/s x4 = 66MB/s

16.6MB/s x6 = 100MB/s

### USB (Universal Serial Bus)

USB is a 4-pin serial peripheral bus that is capable of cascading low/medium speed peripherals (less than 10Mbit/s) such as keyboard, mouse, joystick, scanner, printer and modem.

#### VCM (Virtual Channel Memory)

NEC's Virtual Channel Memory (VCM) is a new DRAM core architecture that dramatically improves the memory system's ability to service multimedia requirements. VCM increases memory bus efficiency and performance of any DRAM technology by providing a set of fast static registers between the memory core and I/O pins. Using VCM technology results in reduced data access latency and reduced power consumption.

#### VRM (Voltage regulator Module)

This is a small module installed on a mainboard to regulate the voltage fed to the processor on board. Voltage regulator can be built on board in various way. VRM is a socketed type of regulator module which is easier to change when needed.

#### Zero Wait State

When memory is operating at its fastest speed in its course of fetching and yielding data, it allows no "no-op" cycle and is called in a zero wait state. On the other hand, a memory is in a wait state, after it gets a command to fetch data, it waits for one, two or more cycles to assure that the expected data is in the buffer.

#### ZIP file

Zip file is a compressed file with a reduced file size.

#### Zoom

To zoom is to make a window or screen larger or smaller in a Graphical User Interface of a computer system. Usually, to "zoom in" means to enlarge, and to "zoom out" means to reduce size.

**MEMO**