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Mainboard

SL-75DRV5 User Manual V2.0

NOTICE

Product Model	**: SL-75DRV5**
Manual Revision	**: V2.0**
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SOLTEK AROUND THE WORLD

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- ☒ Bundled Bonus Pack CD
- ☒ Bundled Bonus Pack Manual
- ☐ Temperature Sensor Cable (Optional)
- ☒ ATA66/100/133 IDE Cable
- ☐ RS232 Cable
- ☒ FDD Cable
- ☒ USB Cable (Optional)

Chapter 1 Introduction

• This chapter briefly introduces the characteristics of the mainboards. It includes the information regarding the chipset, CPU types, built-in functions and layout. Users will have more ideas about mainboards after reading this chapter.

This chapter contains the following topics :

1-1 Mainboard Specification
1-2 Mainboard Layout
1-3 Chipset Diagram

1-1 Mainboard Specification

1-1.1 Processor

• Supporting AMD Athlon™ Thunderbird processor up to 1.5GHz or above.
• Supporting AMD Duron™ processor up to 1.2GHz or above.
• Supporting 200MHz & 266MHz FSB bus.
• Supporting Processor VID(voltage ID) and FID(Frequency ID) auto detection.
• Supporting Atholon™ XP Processors.

1-1.2 Chipset

• VIA KT333 DDR V-Link Host North Bridge.
• VIA VT8233A V-Link Client South Bridge.
• ITE 8705 LPC I/O.

1-1.3 AWARD BIOS V6.0 Supporting

• Plug & Play V1.0.
• Flash Memory for easy upgrade.
• Year 2000 compliant.
• BIOS writing protection.
• TrueBlue Anti-Burn shield.

1-1.4 Sound Controller

• SoundBlaster Pro Hardware and Direct Sound Ready AC97 Digital Audio Controller with Codec onboard.

1-1.5 Power Management

• ACPI 1.0 compliant (Advanced Configuration and Power Interface).
• APM V1.2 compliant (legacy power management).
• Supporting POS mode (Power On Suspend).
• System event monitoring with two event classes.
• Supporting Wake On LAN (WOL) & Wake On Ring.
• Supporting Real Time Clock (RTC) with date alarm, month alarm, and century field.
• USB wake up from S3 function.

1-1.6 Full Featured Accelerated Graphic Port (AGP) Controller

 • AGP v2.0 compliant.
 • Supporting Side Band Addressing(SBA) mode (non-multiplexed address / data).
 • Supporting 66MHz 1x, 2x, and 4x modes for AD and SBA signaling.

1-1.7 Multi-I/O Function

 • Two UltraDMA-33/66/100/133 Master Mode PCI EIDE ports.
 • Two UARTs for complete Serial Ports.
 • One dedicated IR connector:
   --At 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 connector supporting:
   --Standard mode, ECP and EPP.
 • Floppy Disk connector supporting:
   --One FDD with drive swap function.
 • Universal Serial Bus connector supporting:
   -- USB v1.1 and Intel Universal HCI v1.1 compatible.
   -- 2 built-in USB connectors, in addition to one internal USB header which requires
     a USB cable to support 2 more optional USB ports.
 • PS/2 keyboard connector.
 • PS/2 Mouse connector.

1-1.8 Expansion Slots

 • Five PCI bus Master slots.
 • One CNR slot.
 • One AGP 4x mode slot.
 • Three 184-pin DIMM slots.

1-1.9 Advanced High Performance DDR DRAM Controller

 • Supporting memory size up to 3GB.
 • Supporting 184-pin DDR SDRAM type only.
 • Supporting PC1600, PC2100 and PC2700 DDR SDRAM.

1-1.10 Form Factor

 • ATX form factor, 4- layer PCB.
 • Mainboard size 22.5cm x 30.5cm.

1-1.11 Hardware Monitoring

• Programmable control, status to provide, monitoring and alarm for flexible desktop management (software include).
• 5 positive voltage statuses monitoring.
• 2 temperatures statuses monitoring.
• 2 Fan-speeds statuses monitoring.

1-2 Mainboard Layout
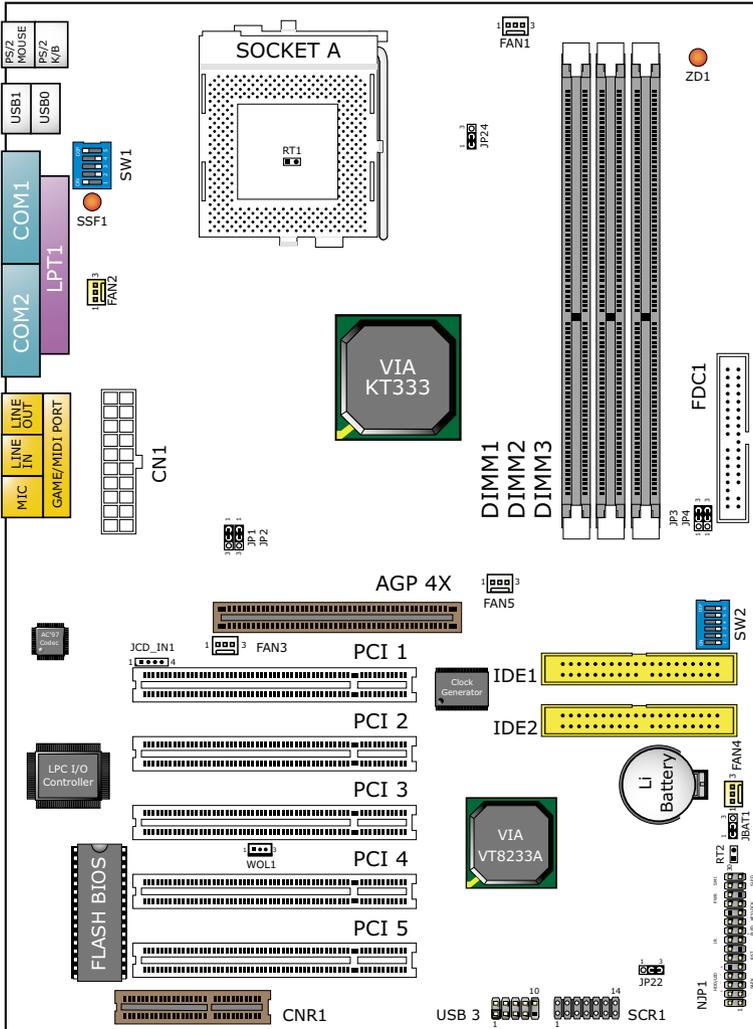
Using non-compliant memory with higher bus clock (overclocking) may severely compromise the integrity of system.

1-3 Chipset Diagram

• The KT333 and VT8233A chipset is a high performance, cost-effective and energy efficient system controller for the implementation of AGP / PCI desktop personal computer system based on 64-bit Socket-A (AMD Athlon) processors.
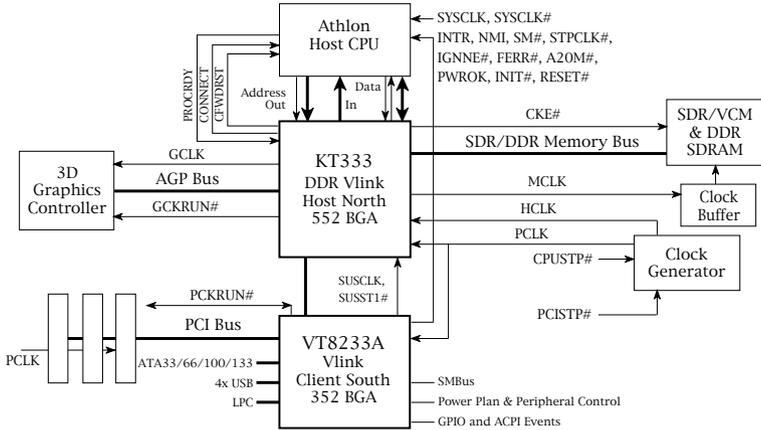
Diagram of Apollo KT333 System Block Using the VT8233A V-Link South Bridge

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MEMO

Chapter 2 Hardware Setup

ATTENTION !!!

1. **Please refer to your processor installation or other documentation attached to your CPU for detailed installing instruction.**
2. **Installing a heat sink and cooling fan is necessary for proper heat dissipation from your CPU. Incorrect installation may result in overheating and damage of your CPU.**
3. **Before changing the setting of CPU Vcore from BIOS program, user SHOULD make sure of correct specification both of CPU CLOCK and RATIO. Incorrect setting may cause damage to your CPU.**

This chapter contains the following topics :

2-1 CPU Installation

2-2 Memory Installation

2-3 AGP 4X (Accelerated Graphics Port) Installation

2-4 HDD/FDD Installation

2-5 Switch Setting For CPU Frequency And Voltage

2-6 Jumper Settings

2-7 Connectors Configuration

2-1 CPU Installation

> • *Make sure that +5V DCV and +3.3 DCV capabilities of your power supply are suitable for the processor.*
> • *Any attempt to operate the AMD Athlon or Duron processor without a suitable cooling Fan will damage processor and other component.*
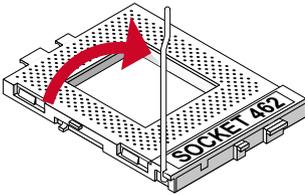
1 Pull out the lever from the socket, and then raise the lever up to a 90-degree angle.
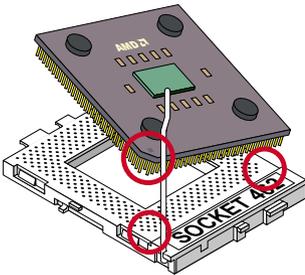
2 Take notice of the red circles as shown below. While inserting the CPU into the socket, you can find out there is a definite pin orientation for CPU and socket.
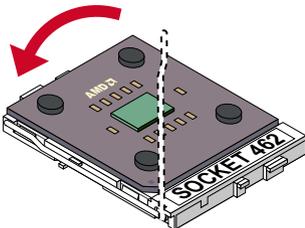
3 Make sure that the CPU is placed into the socket tightly. Then lower down the lever to complete the CPU installation.

2-2 Memory Installation

> • *Make sure to unplug your power supply before adding or removing memory modules or other system components. Failure to do so may cause severe damage to both your mainboard and expansion cards.*
> • *Be careful when inserting or removing DIMM. Forcing a DIMM in or out of a slot improperly may damage the memory module or the slot. Some DIMMs which contain EDO or FTP DRAM are incompliant with the mainboard. The M/B supports 2.5V true DDR SDRAM DIMMs only.*

Installing DIMM
• Make sure you have the correct memory module type for your mainboard.
• Insert the module(s) as shown below, DIMMs have 184-pins and one notch that will be matched by the onboard DIMM slot. Memory modules are installed by inserting them straight into the slot until they "click" in the right place. They only fit in one direction, so do not force them in by a wrong direction.

184-Pin DIMM Notch Key Definitions(2.5V)

DRAM Key Position   Voltage Key Position

2.5V
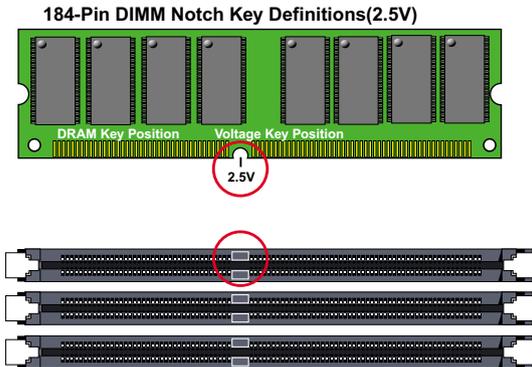
Removing DIMM
• Press down the holding clips on both sides of a DIMM slot and the module will be released from it.

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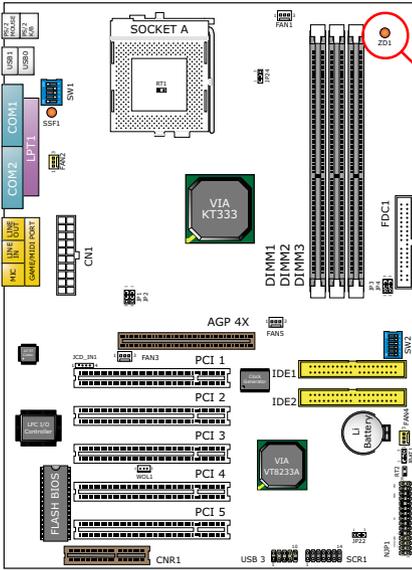
NOTICE:
When LED "ZD1" is on, meaning that 2.5V is operating and flowing into DIMM slots, please do not add or remove memory modules .

2-3 AGP 4X (Accelerated Graphics Port) Installation

• This AGP slot supports both 4X and 2X AGP cards. An AGP 4X card will support a double transfer rate of an AGP 2X card.
When AGP 4X card is used on board, it runs with 1.5V voltage. In case of overclocking, the AGP 4X voltage can be raised by 0.1 stepping by adjusting JP1 and JP2, so as to support a higher transfer rate.

AGP Accelerator

AGP 4X/2X
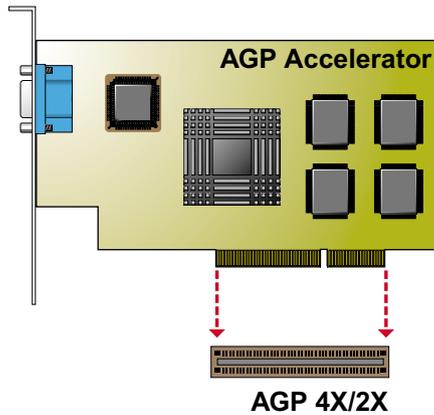
2-4 HDD/FDD Installation

• To install HDD (Hard Disk Drive), you may connect the cable's blue connector to the mainboard's primary (IDE1) or secondary (IDE2) connector, 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 jumper accordingly. Please refer to your hard disk documentation for the jumper settings.
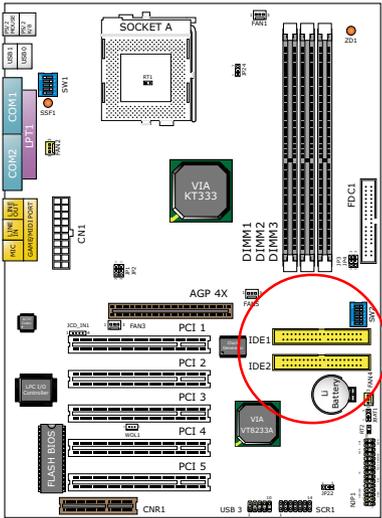
Hard Disk Drive Connector: Orient the red line on the IDE ribbon cable to Pin1.

Gray connector

Black connector

red line
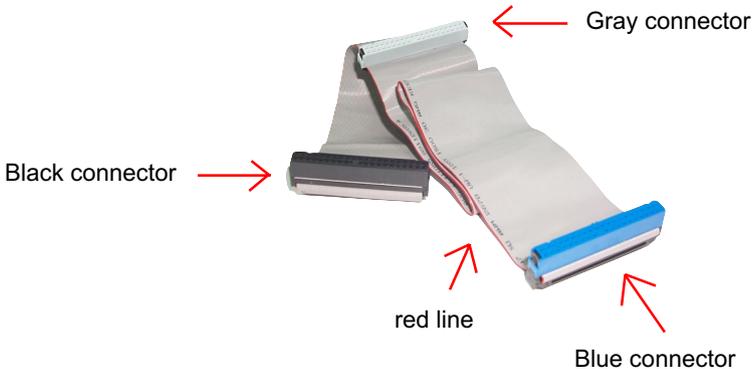
Blue connector

IDE Cable

• To install FDD (Floppy Disk Drive), you may connect the single end to the board , and connect two plugs on the other end to the floppy drives.
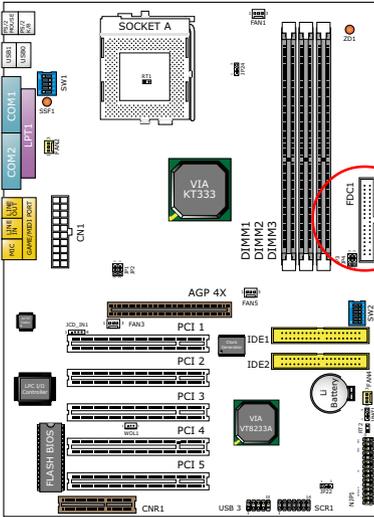
Floppy Disk Drive Connector: Orient the red line on the floppy ribbon cable to Pin1.

To 2nd Floppy Drive

red line

To mainboard

To 1st Floppy Drive

FDD Cable

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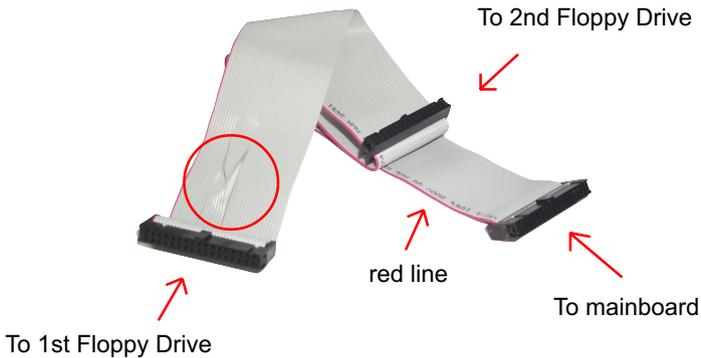
2-5 Switch Setting For CPU Frequency And Voltage

2-5.1 Information On AMD Socket 462 Processor (Model 4, 5 Products)

• On the AMD Socket 462 Processor, you can find a codified identification marking which is to provide useful information about the CPU. The marking is interpreted as below.

AMD XXXX
A 0850 A P T 3 B
① ② ③④⑤⑥⑦

① **Family/Architecture:**
A= AMD Athlon™ Model 4 Processor Architure.
D= AMD Duron™ Processor Architecture.

② **Speed: 0850= 850MHz, 0900= 900MHz,**
1000= 1000MHz, 1100= 1100MHz, etc.

③ **Package Type: M= Card Module, A= PGA.**

④ **Operating Voltage: S= 1.5V, U= 1.6V, P= 1.7V, M= 1.75V, N= 1.8V**

⑤ **Case Temperature: Q= 60°C, X= 65°C, R= 70°C, Y= 75°C,**
T= 90°C.

⑥ **Size of L2 Cache: 1= 64Kbyte, 2= 128Kbyte, 3= 256Kbyte.**

⑦ **Max FSB: A= B= 200MHz, C or others= 266MHz. (For correct**
FSB setting, please refer to chapter 2-5)

2-5.2 Information On AMD Socket 462 Processor (Model 6, 7 Products)

AMD XXXX

A HD 1533 A N S 3 C
① ② ③ ④⑤⑥⑦⑧

① **Family/Architecture:**
A= AMD Athlon™XP Processor Model 6 Architecture.
D= AMD Duron™ Model 7 Processor Architecture.

② **Generation: HD=Desktop Processor,**
X=High-Performance Desktop Processor.

③ **Speed: 0900= 900MHz, 1000= 1000MHz, 1100= 1100MHz,**
1133=1133MHz, 1200=1200MHz, 1300=1300MHz,
1333=1333MHz, 1400=1400MHz, 1500=1500MHz,
1533=1533MHz etc.

④ **Package Type: D=OPGA, A= CPGA.**

⑤ **Operating Voltage: M= 1.75V, N= 1.8V.**

⑥ **Case Temperature: T= 90¨C, S=95¨C.**

⑦ **Size of L2 Cache: 1= 64Kbyte, 3= 256Kbyte.**

⑧ **Max FSB: B= 200MHz, C= 266MHz.**

2-5.3 Information On AMD Socket 462 Processor (Model 8 Products)

AMD XXXX
A X 2000 D K S 3 C
①② ③ ④⑤⑥⑦⑧

① Family/Architecture:
A= AMD Athlon™XP Processor Model 8 Architecture.

② Generation: X=High-Performance Desktop Processor.

③ Model Numbers: 1800 operates at 1533 MHz, 1900 at 1600 MHz, 2000 at 1667 MHz, TBA=1800 MHz, TBA=1867 MHz, TBA=2000 MHz.

④ Package Type: D=OPGA.

⑤ Operating Voltage: K= 1.65V.

⑥ Die Temperature: Q= 100¨C, S=95¨C, T= 90¨C.

⑦ Size of L2 Cache: 3=256Kbyte.

⑧ Max FSB: C=266MHz.

2-5.4 Frequency Ratio Select (By SW1 DIP1-DIP5)

• The AMD Athlon and Duron processors provide four Frequency ID signals (FID) for the system controller to indicate the SYSTCLK multiplier at which the processor core operates. Normally, multiplier (or bus ratio) is detected automatically. Therefore, if the processor does not support the function, then "Bus Ratio" can not be selected.

• When DIP5 of SW1 is on, LED "SSF1" will be on, and light is on, it means that Bus Ratio Select Function is enabled. As long as your CPU supports Bus Ratio Select function, then Bus Ratio can be selected by users.

SSF1
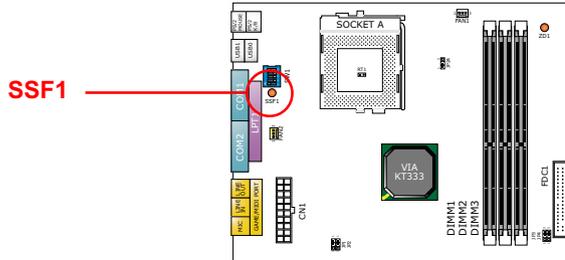
SW1 DIP1 ~ DIP4 SETTING				SW1 DIP5
5.5x		6.0x		
6.5x		7.0x		Bus ratio detected by FID (Auto)
7.5x		8.0x		
8.5x		9.0x		Bus ratio selected by SW1 DIP 1-4
9.5x		10.0x		
10.5x (Default)		11.0x		SW1 DIP 5 allows you to enable or disable the "Frequency Ratio Select" function.
11.5x		12.0x		
12.5x				

2-5.5 CPU External Frequency Setting (By SW2)

SW2	CPU EXTERNAL CLOCK	PCI CLOCK	FSB CLOCK
	100MHz (Default)	33.3MHz	200MHz
	133.3MHz	33.3MHz	266MHz
	140MHz	35.0MHz	280MHz
	150MHz	37.5MHz	300MHz
	166MHz	33.3MHz	333MHz

Important:
 • *Do figure out the correct processor type by processor's OPN (Ordering Part Numbers). Correct CPU external frequency is key to ensure reliability of your system.*
 • *Incorrect CPU external frequency or overclocking might cause unstable performance, so we strongly recommend to leave "SW2" at default setting or legal operation.*

2-6 Jumper Settings

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

JP24: Overheated CPU Shutdown

85˚C Overheated CPU shutdown function enabled (default)	JP24
Overheated prevention disabled	JP24

JP3/JP4: Memory Module Voltage Select

2.5V (default)	JP3 JP4
2.6V	JP3 JP4
2.7V	JP3 JP4

JBAT1: Clear CMOS Data

Clear CMOS Data	JBAT1
Retain Data (Default)	JBAT1

JP1/JP2: AGP 4X Voltage Select

1.5V (default)	JP1 JP2
1.6V	JP1 JP2
1.7V	JP1 JP2

JP22: Power Lost Resume

Disabled (default)	JP22
Enabled	JP22

☺☺ *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.*

2-6.1 JP1/JP2 AGP 4X Voltage Select

JP1/JP2: AGP 4X Voltage Select	
1.5V (default)	JP1 JP2
1.6V	JP1 JP2
1.7V	JP1 JP2

2-6.2 JP3/JP4 Memory Module Voltage Select

This function allows you to select the voltage supplied to the DRAM. The default voltage (2.5V) should be used unless processor overclocking requires a higher voltage.

JP3/JP4: Memory Module Voltage Select	
2.5V (default)	JP3 JP4
2.6V	JP3 JP4
2.7V	JP3 JP4

2-6.3 JP1 Power Lost Resume

This jumper allows user to use the switch of ATX power supply to control ON/OFF switch directly instead of using the power switch on the mainboard.

JP22: Power Lost Resume	
Disabled (default)	⬜🔲🔲 1 3 JP22
Enabled	🔲🔲⬜ 1 3 JP22

2-6.4 JP24 Overheated CPU Shutdown

JP24 is a design to enable the overheat prevention function for some CPUs which are incorporated with a protective thermal diode. The latest AMD Athlon XP CPUs are incorporated with such thermal diode and can be protected by this function. Setting JP24 at 1-2 closed (the default setting) will shut down the system when CPU gets to 85˚C (the default protection temperature). Only when it gets cooler, can you restart your system.
For other CPUs that are not incorporated with a protective thermal diode, JP24 is a vain design. Please set it at 2-3 closed to disable the function.

<u>Reminder</u>: If a sudden shutdown happens to your system which has been running well for a while with an AMD Athlon XP CPU, this might be caused by the "Overheated CPU Shutdown" design. Please use a better CPU cooling fan and restart your system.

JP24: Overheated CPU Shutdown	
85˚C Overheated CPU shutdown function enabled (default)	3 ⬜ 🔲 1 🔲 JP24
Overheated prevention disabled	3 🔲 🔲 1 ⬜ JP24

2-6.5 JBAT1 For Clear CMOS Data

A battery must be used to retain the mainboard configuration in CMOS RAM.

JBAT1: Clear CMOS Data	
Clear CMOS Data	JBAT1
Retain Data (Default)	JBAT1

⊙⊙ *NOTE:*
You can clear CMOS by 2-3 pin closed when the system is POWER OFF. Then, return to 1-2 pin closed position (default). You may damage the mainboard if clearing the CMOS with POWER ON. Unplugging the power cord from power supply before clearing CMOS will be a safest bet for user.

2-7 Connectors Configurations

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

2-7.1 On Board FAN Connector

GND
+12V
SENSOR
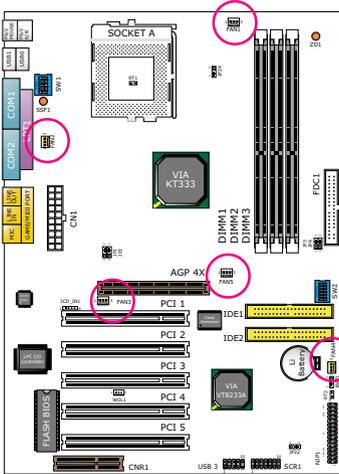
On-Board FAN Connectors		
CPU FAN1		FAN1
CPU FAN2		FAN2
SYSTEM FAN1		FAN3
CHASSIS FAN		FAN4
SYSTEM FAN2		FAN5

These fan connectors support CPU/System/chassis cooling fan with +12V. When connecting wire to FAN connectors, users should pay attention 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 this 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:*
> *1. Always consult vendor for proper CPU cooling fan.*
> *2. 2"Yellow" fan connectors are used on this series to mark that they support fan speed sensor function. The other 3 white fan connectors do not support sensor function.*

2-7.2 WOL1 Wake On LAN

GND

+5V Standby **PME**
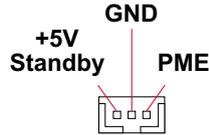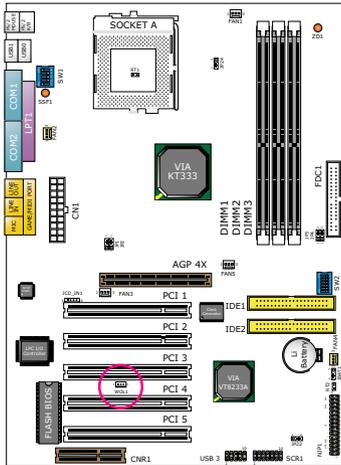
WOL1: Wake On LAN	
Connect the Wake On LAN signal from LAN card to WOL1	WOL1

This connector connects to a LAN card with a Wake On LAN output. The connector powers up the system when it receives a wake-up packet or signal through the LAN card.

This feature requires that Wake On LAN feature is enabled in the BIOS setting called *"Power Management Setup"* and that your system must be on ATX power supply with at least 720mA / +5V standby power.

2-7.3 CD-ROM Audio Connector (JCD_IN1)

1 ▮●●● 4
JCD_IN1
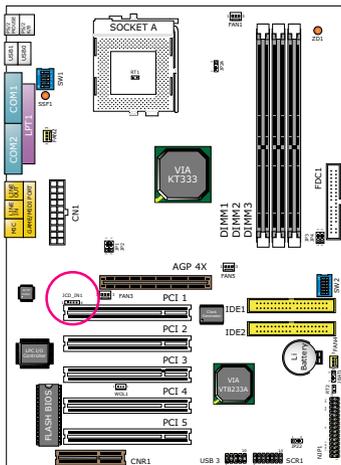
JCD_IN1: CD ROM Audio Connector	
PIN NO.	CD1
PIN 1	Left Channel
PIN 2	GND
PIN 3	GND
PIN 4	Right Channel

2-7.4 RT1/RT2 Thermal Sensor Connector (Option)

■ ● RT1	RT1 mounted with blue Thermal Resistor.

● ● RT2	To RT2 b. To Devices a. **Thermal Cable**
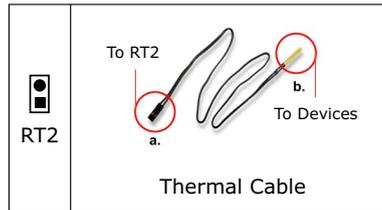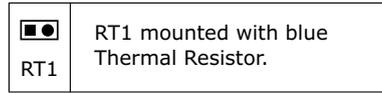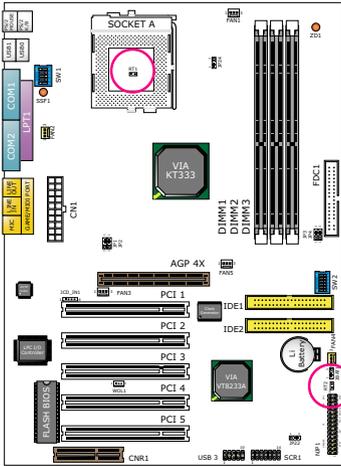
1. Connector RT1: A blue thermal resistor is already soldered to connector RT1 to detect the temperature round the mainboard. What RT1 does is to transmit the thermal signal to BIOS or Hardware Monitor.

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.**

2-7.5 Complex Header

• This complex Header consists the following connector for various supports:

```
                                    30
                    GND  ─┤■■├─ GND
      ① SMI ─┤        SMI SIGNAL ─┤■■├─ SUSPEND LED SIGNAL       ┤─ SUSPEND LED ⑤
                    Vcc ─┤■■├─
  ② POWER SWITCH ─┤   ATX POWER SWITCH ─┤■■├─ NO CONNECTION
                                    ─┤■■├─ NO CONNECTION
                    Vcc ─┤■■├─ GND (-)
            NO CONNECTION ─┤■■├─ NO CONNECTION    ┤─ POWER LED ⑥
  ③ INFRARED(IR) ─┤ INFRARED TRANSMIT SIGNAL ─┤■■├─ Vcc (+)
                    GND ─┤■■├─
            INFRARED TRANSMIT SIGNAL ─┤■■├─ GND
                                    ─┤■■├─ RESET SIGNAL      ┤─ RESET SWITCH ⑦
        2nd HDD LED ┤ Logic High (+) ─┤■■├─ SPEAKER SIGNAL
  ④ ─┤           HDD LED SIGNAL (-) ─┤■■├─ GND
        1st HDD LED ┤ HDD LED SIGNAL (-) ─┤■■├─ NO CONNECTION   ┤─ SPEAKER ⑧
            Logic High (+) ─┤■■├─ Vcc
                                    1
```

1. SMI Connector (System Management Interrupt):
   Connection: This 2-pin connector is connected to the case-mounted Suspend Switch.
   Function : Manually placing the system into a 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.

2-7.6 ATX Power Supply Connector

• This connector connects to an ATX power supply. The plug from the power supply should only be inserted to ATX Power connector in a specific orientation. Find the proper orientation and push it down firmly to make sure that all pins are aligned.
• Your power supply should support at least 10mA on the 5V standby voltage. It may cause difficulty to turn on the system power if the power supply does not support the load.
• **For Wake On LAN function, the power supply should support at least 720mA current.**

```
      +12V ——— |o|o| ——— VCC
+5V Standby ——— |o|o| ——— VCC
Power Good ——— |o|o| ——— -5V
       GND ——— |o|o| ——— GND
       VCC ——— |o|o| ——— GND
       GND ——— |o|o| ——— GND
       VCC ——— |o|o| ——— Power Supply on
       GND ——— |o|o| ——— GND
      VCC3 ——— |o|o| ——— -12V
      VCC3 ——— |o|o| ——— VCC3
```
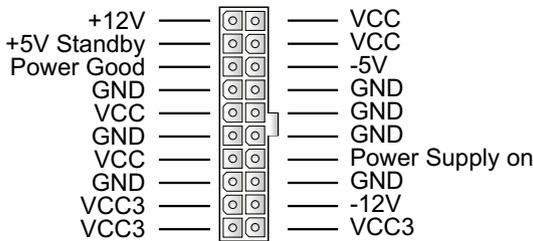
2-7.7 Chassis Panel Connectors
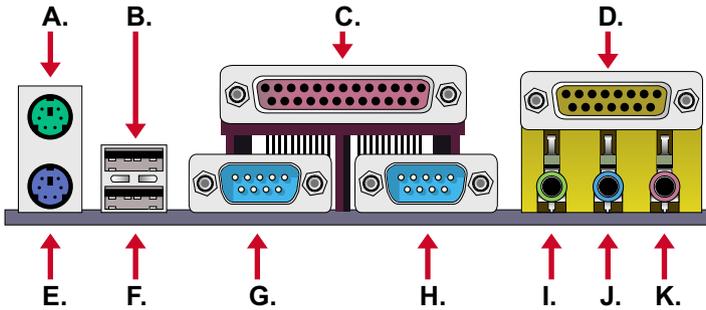
A : PS/2 MOUSE PORT
B : USB 0 PORT
C : LPT1 PORT
D : GAME/MIDI PORT
E : PS/2 KEYBOARD PORT
F : USB 1 PORT
G : COM 1 PORT
H : COM 2 PORT
I   : LINE OUT / SPEAKER OUT PORT
J : LINE IN
K : MICROPHONE

2-7.8 PS/2 Mouse And PS/2 Keyboard

PIN 6 : None
PIN 5 : Mouse Clock
PIN 4 : Vcc
PIN 3 : GND
PIN 2 : None
PIN 1 : Mouse Data

PS/2 MOUSE

PIN 6 : None
PIN 5 : Keyboard Clock
PIN 4 : Vcc
PIN 3 : GND
PIN 2 : None
PIN 1 : Keyboard Data
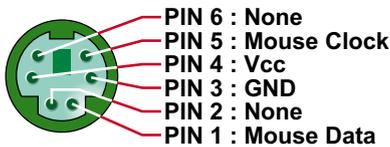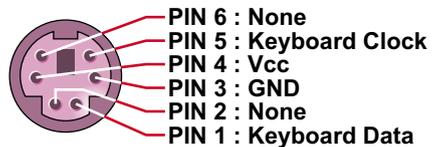
PS/2 KEYBOARD

2-7.9 Smart Card Reader Connector (SCR1)

• The connector "SCR1" allows you to use Smart Card Reader. It is compliant with Personal Computer Smart Card (PC/SC) working group standard and smart card (ISO 7816) protocols.
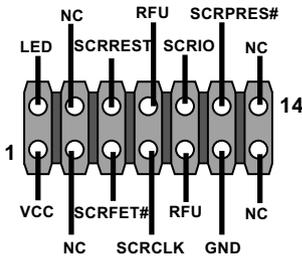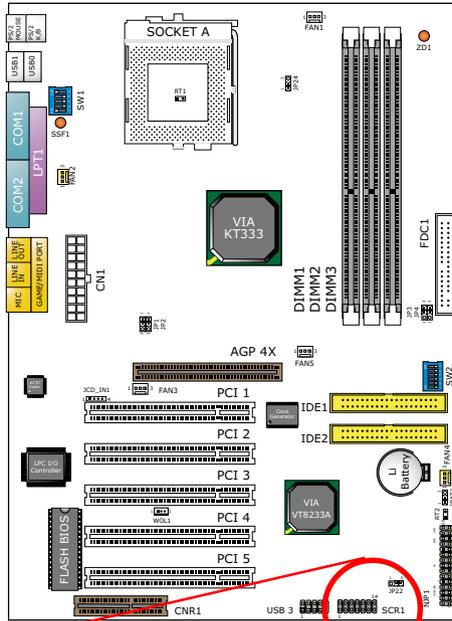
SCR1 pin assignment

2-7.10 Communication And Networking Riser Slot (CNR)

• This connector allows you to use network, modem or audio riser cards.
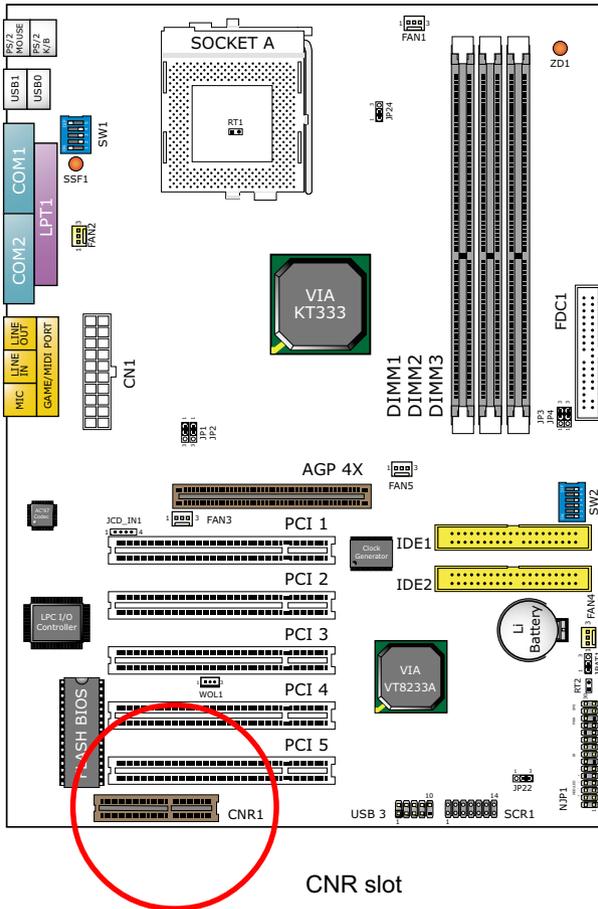
CNR slot

🐸 *Note:*
1. If modem CNR is installed, the modem CNR must be set as primary.
2. LAN CNR is not supported on this mainboard.
3. The audio CNR must be set as secondary, if on-chip AC 97 is enabled.
4. CNR devices are not provided with this mainboard.

2-7.11 USB Ports and USB Headers (Header USB 3)

• This series of mainboards provides two USB ports USB0 and USB1 on board supporting various USB devices. In addition, the USB header is added on board to provide two additional USB ports by using one additional USB Cables. User can order the additional USB cable from your mainboard dealers or venders.
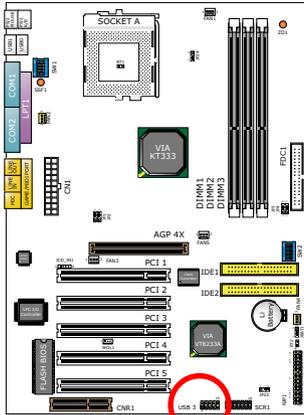
Additional USB Cable
(Optional)

USB Port
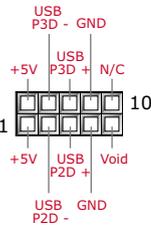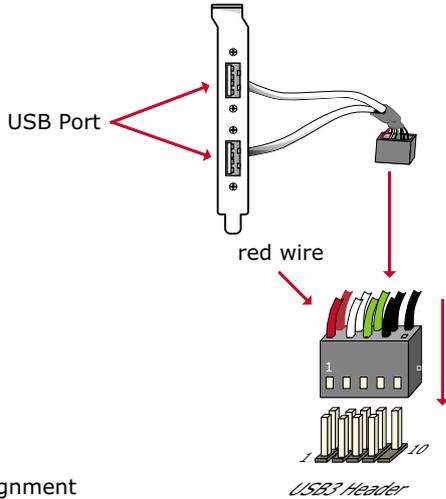
red wire

USB3 Header Pin Assignment

USB3 Header

• When plugging the USB cable into Header USB3, user must make sure the red wire is connected to Pin 1.

MEMO

Chapter 3 Software Setup

Drivers, Utilities and Software Installation

- Support CD:

  This series of mainboards will always be 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:

  For this series, user will be able to find in the Support CD the following drivers and utilities:
  1. VIA 4-in-1 Drivers;
  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 NT4.0, Windows 2000 and Windows XP. The installation procedures for all these operating systems are all programed into an auto-run mode. What users have to do is to read and follow the pop-up instructions to carry out the installation. We therefore take the installation on Windows 98 as the general illustration hereby.

The priority of drivers to be installed should also be noted. Users are recommended to take the following installation orders :

This chapter contains the following topics :

3-1 Open Support CD and choose your drivers
3-2 4-in-1 Drivers Installation
3-3 AC'97 Audio Drivers Installation
3-4 Hardware Monitor Utility Installation

3-1 Open up the Support CD and choose Drivers and Utilities

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 series:

Install VIA 4in1 Driver

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 "VIA 4in1 Driver" as first installation priority to optimize the VIA system.

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

3-2 Proceed to VIA 4-In-1 Drivers Installation

1 Following the procedures of opening the Support CD, click to " VIA 4in1 Drivers" to proceed.

2 The VIA Service Pack InstallShield Wizard will pop up to guide you to the VIA Service pack installation. Press **"Next"** button to continue.

3 **"VIA Service Pack README"** screen will appear, please click the **"Yes"** button to agree with the Licence Agreement and continue.

4 On the screen below, check "Normally Install" and click "Next" to continue. (If you check "Quickly Install", you will skip the detailed procedures of the VIA 4in1 Setup.)
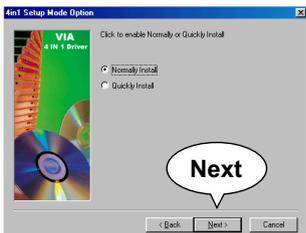
5 Select the checkbox as below and click "Next" to continue:

☑ VIA ATAPI Vendor Support Driver
☑ AGP VxD Driver
☑ IRQ Routing Miniport Driver
☑ VIA Chipset Function's Registry
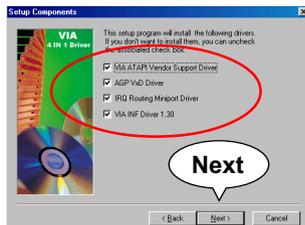
6 Select **"Install VIA ATAPI Vendor Support Driver"** checkbox, then click the **"Next"** button to continue.
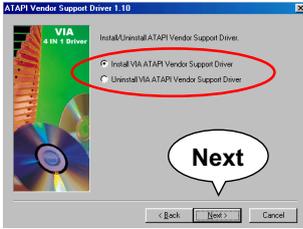
7 Click on **"Click to enable DMA Mode"** checkbox to enable DMA function, then click the **"Next"** button to continue.
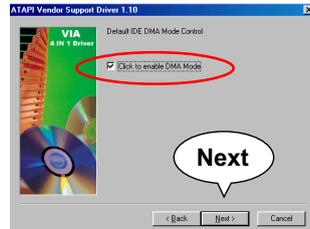
8 Select "**Install VIA AGP VxD**" in turbo mode and press **"Next"** button to continue.
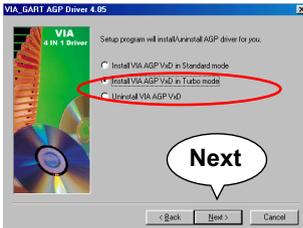
9 Select "**Install VIA IRQ Routing Miniport Driver**" checkbox, then click the **"Next"** button to continue.
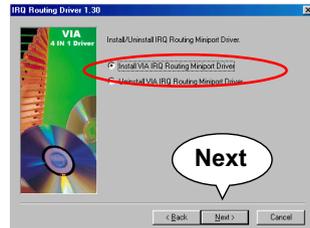
10 After all these setup procedures have finished, you should restart your computer by clicking on **"Finish"** so as to put VIA 4in1 drivers into effect and proceed to second driver installation.
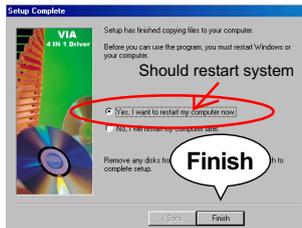
3-3 Proceed to AC'97 Audio Driver Installation

1 Following the installation of VIA 4in1 drivers, you have to restart system so that your system can be reconfigured with VIA 4in1. When restarting procedures finish, please open the Support CD with your CD-ROM to enter the Main Installation Menu. Then click to "Install VIA AC'97 Audio Driver".

2 The VIA Audio Driver Setup InstallShield Wizard will pop up to guide you to the VIA Audio Driver installation. Press "Next" button to continue.

3 When asked to install or remove the audio driver, please select "Install" and press "Next" button to continue.

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 have to install Hardware Monitor manually. Please click to the following path to execute Hardware Monitor installation:

> D: \ Hardwaremonitor\ ITE2 \ Install.exe
> (assuming that your CD-ROM Drive is Drive D)

2 In case you are already on the Installation Main Menu of the Support CD, please click to the "Install Hardware Monitor". Instantly, a message shows up to inform you of the correct path of installing "Hardware Monitor". Please Exit the message and follow the path as instructed:

> For user who wants to install Hardware monitor utility, please install it through this path:
>
> D:\hardwaremonitor\ITE2\install.exe
> (assuming that your CD-ROM Drive is Drive D)

3 Once you enter the path and click to the file "Install.exe", instantly the "ITE SmartGuardian Install" pops up. Please click to "Install" to continue.

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

5 To display the Hardware Monitor Utility, just click on the "ITE SMARTGUARDIAN" 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.
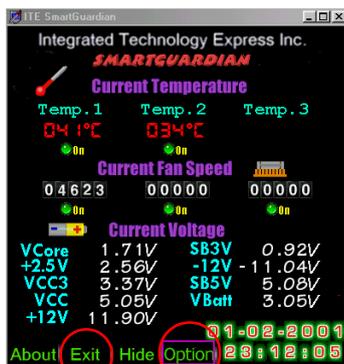
"Exit" "Option"

MEMO

Chapter 4 BIOS Setup

THE BIOS

- BIOS stands for Basic Input and Output System. It is sometimes called ROM BIOS because it is stored in a Read-Only Memory(ROM) chip on the mainboard. BIOS 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 to manage your PC hardware by means of a set of routines called BIOS Run-Time Service.

This chapter contains the following topics :

4-1 What Is BIOS Setup
4-2 How To Run BIOS Setup
4-3 What Is CMOS
4-4 What Is POST
4-5 BIOS Upgrade
4-6 BIOS Setup

4-1 What Is 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 How To Run BIOS Setup

• To access BIOS setup menu, press < DEL > key after "POST", and before the OS is loaded. The BIOS usually display the following message:

```
Press DEL to enter SETUP
```

4-3 What Is CMOS

• CMOS is the memory maintained by a battery. The BIOS uses CMOS to store the settings you have selected in SETUP. The 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 is 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 SETUP.

4-4 What Is POST

• POST is an acronym for Power On Self Test. POST 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 BIOS Upgrade

• System BIOS is incorporated into a Flash memory component of the mainboard. 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 and used to provides the capability to save, verify, and update the system BIOS. The upgrade utility can 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 (AWDFLASH.EXE) to a bootable floppy disk in case you need to reinstall the BIOS later.

4-5.2 Upgrade Process

> 👓 *Note:*
> *Normally, to upgrade BIOS is unnecessary if the system is working fine without any problem. Users should not upgrade the BIOS unless you experience incompatible problems or need to create new features. However, please read all information in this section before upgrading.*

"AWDFLASH.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 only, the utility can not be executed in win95/98, ME, NT or WINDOWS 2000 environment.*

Upgrading the system BIOS

Step 1. Please visit the board maker's website, download latest BIOS file and award flash utility "AWDFLASH.EXE". The BIOS file format will be *.bin, of which "*" stands for the specific file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and award flash utility "AWDFLASH.EXE" into the diskette.

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

Step 4. Type **awdflash *.bin /sn/py/cc** and then press <Enter> to run BIOS upgrade program. (*.bin depends on your mainboard model and version code. Instead of typing "*", you should type specific file name for your specific mainboard).

Step 5. Please press <F1> or <F10> to exit or reset your system, ***Warning !*** If the message ***"Write Fail"*** appears while Award "FLASH MEMORY WRITER" is verifying Flash memory, just repeat the process. Please DO NOT reset or turn off the system. If the award memory flash utility is not able to update the BIOS successfully, your system may not be able to boot up.

Step 6. You will need a message "CMOS checksum error-Default loaded" during booting the system. Press <Del> to run CMOS setup utility, then reload "LOAD SETUP DEFAULTS" or **"Load Optimized De faults"** and save this change.
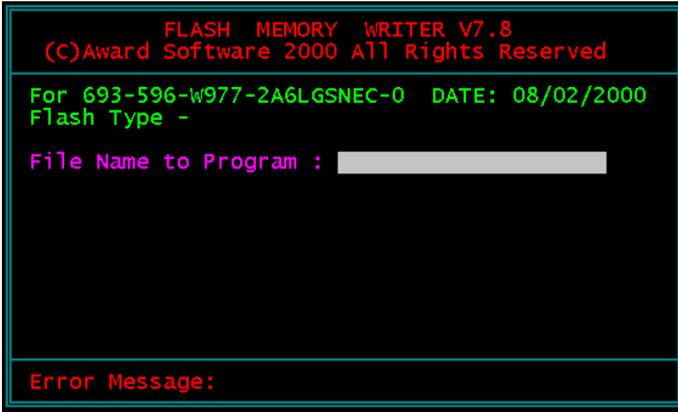
Award Flash Memory Writer Start Screen
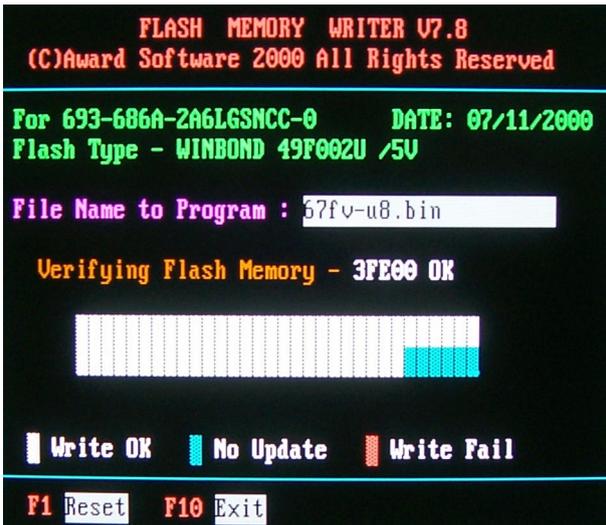
Award Flash Memory Writer Complete Screen

The parameters of AWDFLASH.EXE

/sn: No original BIOS backup
/py: Program flash memory
/cc: Clear CMOS data (and update data automatically) after
     programming

NOTE: *Users can type AWDFLASH /? to get further details about the parameters. Incorrect usage of the parameter will damage the BIOS information, so we strongly recommend user to leave parameters alone unless you fully understand their function.*

4-6 BIOS Setup --- CMOS Setup Utility

4-6.1 CMOS Setup Utility

• This mainboard comes with the AWARD BIOS from AWARD Software 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 ENTER SETUP

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

CMOS Setup Utility - Copyright (C)   1984 - 2002 Award Software

▸ Standard CMOS Features	▸ Frequeny/Voltage Control
▸ Advanced BIOS Features	Load Optimized Defaults
▸ Advanced Chipset Features	Set Supervisor Password
▸ Integrated Peripherals	Set User Password
▸ Power Management Setup	Save & Exit Setup
▸ PnP/PCI Configurations	Exit Without Saving
▸ SmartDoc Anti-Burn shield	

Esc : Quit	↑↓ → ← : Select Item
F10 : Save & Exit Setup	

Time, Date, Hard Disk Type...

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 AND 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:

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
Standard CMOS Features

		Item Help
Date (mm:dd:yy)	Mon, January 22 2002	
Time (hh:mm:ss)	9 : 52 : 15	Menu Level ▸
▸ IDE Primary Master	None	
▸ IDE Primary Slave	None	
▸ IDE Secondary Master	None	
▸ IDE Secondary Slave	None	
Drive A	1.44M, 3.5 in	
Drive B	None	
Video	EGA/VGA	
Halt On	All, Errors	
Base Memory	640K	
Extended Memory	31744K	
Total Memory	32768K	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.

Date (mm:dd:yy) The BIOS determines the day of the week from the other date information. This field is for information only.

Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss) The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Primary / Secondary Master / Slave This field records the specifications for all non-SCSI hard disk drives installed in your system. Refer to the respective documentation on how to install the drives.

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master	Auto	Menu Level ▸▸
Access Mode	Auto	
Capacity	13022 MB	
Cylinder	25232	
Head	16	
Precomp	0	
Landing Zone	25231	
Sector	63	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Drive A / Drive B Select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:
360KB, 5.25in;
1.2MB, 5.25in;
720KB, 3.5in;
1.44MB, 3.5in;
2.88MB, 3.5in;
None.

Video Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in setup.

Halt On During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process.

Base Memory Typically 640KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory Above the 1MB boundary. Early IBM personal computers could not use memory above 1MB, but current PCs and their software can use extended memory.

Total Memory This option shows system memory capacity.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.

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:

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
Advanced BIOS Features

		Item Help
Virus Warning	Disabled	
CPU Internal Cache	Enabled	Menu Level ▶
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
× Typematic Rate (Chars/Sec)	6	
× Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
Video BIOS Shadow	Enabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

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.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

— — — — — — — — — — — — — — — — — — —

Virus Warning When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive.
You should then run an antivirus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

> ☺☺ *NOTE: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you disable the virus warning.*

CPU Internal Cache/ Cache memory is additional memory that is much
External Cache faster than conventional DRAM (system memory). CPUs from 486-type up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for faster access by the CPU.

CPU L2 Cache ECC When you select *Enabled*, it will speed up memory
Checking checking when the external cache contains ECC SRAMs.
The choices: Enabled; Disabled.

Quick Power On Self Test Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second/Third/ Other Boot Device The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The choices: Floppy; LS/ZIP; HDD; SCSI; CDROM; Disabled.

Swap Floppy Drive When enabled, floppy drives A and B will be exchanging without any physical connection and modification on the cables.

Boot Up Floppy Seek When enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 270KB, 1.2MB, and 1.44MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to a disabled to save time.

Boot Up NumLock Status 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.

Gate A20 Option Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to *Fast*, the system chipset controls Gate A20. When set to *Normal*, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

Typematic Rate Setting When *Disabled*, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.
When *Enabled*, you can select a typematic rate and typematic delay.

Typematic Rate (Chars / Sec) When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.

Typematic Delay (Msec) Choices: 250; 500; 750; 1000. This option sets the time interval for displaying the first and the second characters. If enabled, the time interval is optional.

Security Option If you have set a password, select whether the password is required every time the System boots, or only when you enter setup.
The choices: system; setup.

OS Select For DRAM > 64MB Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on your system.

Video BIOS Shadow Performance will be improved by copying Video BIOS to Shadow RAM.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.

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:

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.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

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Advanced Chipset Features

		Item Help
▸ DRAM Colck/Drive Control	Press Enter	Menu Level ▸
▸ AGP & P2P Bridge Control	Press Enter	
▸ CPU & PCI Bus Control	Press Enter	
Memory Hole	Disabled	
System BIOS Cacheable	Disabled	
Video RAM Cacheable	Disabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

DRAM Clock/Drive Control

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
DRAM Clock/Drive Control

```
┌─────────────────────────────────────────────┬──────────────────┐
│  Current FSB Frequency                        │   Item Help      │
│  Current DRAM Frequency                       │  Menu Level ▸    │
│  DRAM Clock              By SPD               │                  │
│  DRAM Timing             Manual               │                  │
│  DRAM CAS Latency        2.5                  │                  │
│  Bank Interleave         Disabled             │                  │
│  DRAM Burst Length       4                    │                  │
│  DRAM Queue Depth        2 level              │                  │
│  DRAM Command Rate       2T  Command          │                  │
│  Sysem Performance       Normal               │                  │
│  DDSkew Level            00                    │                  │
│                                               │                  │
│                                               │                  │
└─────────────────────────────────────────────┴──────────────────┘
```

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

* Current FSB Frequency This item allows you to control the FSB Frequency.

* Current DRAM Frequency This item allows you to control the DRAM Frequency.

* DRAM Clock The value represents the performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating.

* DRAM Timing When this item Enabled, DRAM Timing is set by SPD.
SPD (Serial Presence Detect) is located on the memory modules, BIOS reads information coded in SPD during system boot up.

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* DRAM CAS Latency   When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

* Bank Interleave   The choices: Disabled; 2 Bank; 4 Bank.

* DRAM Burst Length   This setting allows you to set the size of Burst-Length for DRAM. Bursting feature is a technique that DRAM itself predicts the address of the next memory location to be accessed after the first address is accessed. To use the feature, you need to define the burst length, which is the actual length of burst plus the starting address and allows internal address counter to properly generate the next memory location. The bigger the size, the faster the DRAM performance.
The choices: 4 QW, 8 QW.

* DRAM Queue Depth   The choices: 1 level; 2 level; 3 level; 4 level.

* DRAM Command Rate   The choices: Disabled; 2 Bank; 4 Bank.

* System Performance   The choices: Normal; Fast; Faster; Fastest.

* DDSkew Level   The choices: 00-0C.

— — — — — — — — — — — — — — — — —

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AGP & P2P Bridge Control

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AGP & P2P Bridge Control

AGP Aperture Size	64M	Item Help
AGP Mode	4X	Menu Level ▸
AGP Driving Control	Auto	
×AGP Driving Value	DA	
AGP Fast Write	Disabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

* AGP Aperture Size Series of options are available: 4, 8, 16, 32, 64, 128 or 256 MB. Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is like a linear buffer. BIOS will automatically report the starting address of this buffer to the O.S. The default setting is 64MB.

* AGP Mode This item allows you to select AGP Mode.
The choice: 1x, 2x, 4x.

* AGP Driving Control This item allows you to adjust the AGP driving force. Choose Manual to key in a AGP Driving Value in the next selection. This field is recommended to set in Auto for avoiding any error in your system.
The choice: Manual, Auto.

* AGP Driving Value This item allows you to adjust the AGP driving force.
The choice: Min=0000 ~ Max=00FF.

* AGP Fast Write This item will enable the AGP model into fast write mode. If your graphics card does not support this function, please do not enable this function.

* AGP Master 1 ws write Leave this field at default.

* AGP Master 1 ws read Leave this field at default.

— — — — — — — — — — — — — — — — — —

CPU & PCI Bus Control

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CPU & PCI Bus Control

		Item Help
PCI1 Master 0 WS Writer	Enabled	Menu Level ▸
PCI2 Master 0 WS Write	Enabled	
PCI1 Post Write	Enabled	
PCI2 Post Write	Enabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

* PCI1 Master 0 WS Write When Enabled, writes to the PCI bus are executed with zero wait states.
The choice: Enabled, Disabled.

* PCI2 Master 0 WS Write Leave this field at default.

* PCI1 Post Write Leave this field at default.

* PCI2 Post Write Leave this field at default.

— — — — — — — — — — — — — — — — — —

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Memory Hole In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB. The choices: 15M-16M; Disabled.

System BIOS Cacheable Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance.

Video RAM Cacheable Selecting Enabled allows caching of the video memory (RAM) at A0000h-AFFFFh, resulting in better video performance. However, check your AGP manual to find out if any compatibility problem exists.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.

4-6.5 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:

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
Integrated Peripherals

		Item Help
▶ VIA OnChip IDE Device	Press Enter	Menu Level ▶
▶ VIA OnChip PCI Device	Press Enter	
▶ SuperIO Device	Press Enter	
Init Display First	AGP	
OnChip USB Controller	All Enabled	
USB keyboard Support	Disabled	
IDE HDD Block Mode	Enabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

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.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

VIA OnChip IDE Device

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
VIA OnChip IDE Device

```
┌──────────────────────────────────────────┬─────────────────┐
│ OnChip IDE Channel0         Enabled       │    Item Help    │
│ OnChip IDE Channel1         Enabled       │  Menu Level  ▸  │
│ IDE Prefetch Mode           Enabled       │                 │
│ Primary Master PIO          Auto          │                 │
│ Primary Slave PIO           Auto          │                 │
│ Secondary Master PIO        Auto          │                 │
│ Secondary Slave PIO         Auto          │                 │
│ Primary Master UDMA         Auto          │                 │
│ Primary Slave UDMA          Auto          │                 │
│ Secondary Master UDMA       Auto          │                 │
│ Secondary Slave UDMA        Auto          │                 │
│                                           │                 │
│                                           │                 │
└──────────────────────────────────────────┴─────────────────┘
```

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

* On-Chip IDE channel 0/1 The chipset contains a PCI IDE interface with support from two IDE channels. Select Enabled to activate the first and/or the second IDE interface. Select Disabled to inactivate an interface if you install a primary and/or second add-on IDE interface.
The choices: Enabled; Disabled.

* IDE Prefetch Mode The on-board IDE drive supports IDE perfecting for faster drive accesses. If the IDE device doesn't support perfecting, set this field to Disabled.
The choices: Enabled; Disabled.

* Primary Master / Slave PIO Secondary Master / Slave PIO Choose Auto or Mode 0~4. The BIOS will detect the HDD mode type automatically when you choose Auto. You need to set to a lower mode than Auto when your hard disk becomes unstable.
The choices: Auto; Mode 0; Mode 1; Mode 2; Mode 3; Mode 4.

* Primary
Master / Slave UDMA
Secondary
Master / Slave UDMA

Ultra DMA33/66/100 implementation is possible only if your IDE hard drive supports it, if the operating environment includes a DMA drive, and if your system software both support Ultra DMA33/66/100. Select "Auto" to enable BIOS support.
The choices: Auto; Disabled.

— — — — — — — — — — — — — — — — — —

VIA OnChip PCI Device

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
VIA OnChip PCI Device

VIA-3058 AC'97 Audio	Auto	Item Help
VIA-3068 MC97 Modem	Disabled	Menu Level ▸

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

* VIA-3058 AC'97
Audio

Select *"Disabled"* to use the on-chip audio capability of your system. Most of the field do not appear when this field is "Disabled", for user who wants to use add-on sound card, this tiled must be disabled.

* VIA-3068 MC97
Modem

This option allows you to decide to enable/disable the Onchip Modem.
The choices: Auto; Disabled.

— — — — — — — — — — — — — — — — — —

VIA SuperIO Device

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
SuperIO Device

Onboard FDC Controller	Enabled	Item Help
Onboard Serial Port 1	Auto	Menu Level ▸
Onboard Serial Port 2	Auto	
UART Mode Select	Normal	
UR2 Duplex Mode	Half	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
ECP Mode Use DMA	3	
Game Port Address	201	
Midi Port Address	330	
Midi Port IRQ	10	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

* Onboard FDC Controller Select Enabled if your system has a floppy drive controller (FDC) installing in the system board and you want to use it. If you install add-in FDC or the system has no floppy drive, select Disabled in this field.
The choices: Enabled; Disabled.

* Onboard Serial Port 1 / Port 2 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.

* UART Mode Select The second serial port on your system may offer a variety of infrared port modes. Click here for a description of various modes. (Click your browser's Back button, or your right mouse button, to return to this page.)
The choices: Standard; HPSIR; ASKIR

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* UR2 Duplex Mode This item allows you to select the IR half / full duplex function.
The choices: Half; Full.

* Onboard Parallel Port This item allows you to determine onboard parallel port controller I/O address setting.
The choices: 378H/IRQ7; 278H/IRQ5; 3BC/IRQ7; Disabled.

* Parallel Port Mode Select an operating mode for the on-board parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and software both support one of the other available modes.

* ECP Mode Use DMA Select a DMA channel for the port.

* Game Port Address This item allows you to select the onboard game port I/O address.

* Midi Port Address This item allows you to select the onboard Midi port I/O address.

* Midi Port IRQ This item allows you to select the Midi port IRQ.

— — — — — — — — — — — — — — — — — —

Init Display First Initialize the AGP video display before initializing any other display device on the system. Thus the AGP display becomes the primary display.

OnChip USB Controller Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

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

IDE HDD Block Mode Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.
The choices: Enabled; Disabled.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.

4-6.6 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:

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
Power Management Setup

		Item Help
ACPI Function	Enabled	Menu Level ▸
ACPI Suspend Type	S1(POS)	
Power Management Option	User Define	
HDD Power Down	Disabled	
Suspend Mode	Disabled	
Video Off Option	Suspend->Off	
Video Off Method	V/H SYNC+Blank	
MODEM Use IRQ	3	
Soft-Off by PWRBTN	Instant-Off	
State After Power Failure	Auto	
▸ IRQ/Event Activity Detect	Press Enter	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

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.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

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ACPI Function   Select Enabled only if your computer's operating system supports the Advanced Configuration and Power Interface (ACPI) specification. Currently, Windows NT 5.0 support ACPI.

ACPI Suspend Type   This item allows you to select the ACPI suspend type. You can select S1(POS) for power on suspend under Windows 98 ACPI mode.
The choice: S1(POS).

Power Management Option   This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes.
This table describes each power management mode:

Max Saving	Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out period in the section for each mode stated below.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

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

Suspend Mode   After the selected period of system inactivity, the chipset enters a hardware suspend mode, stopping the CPU clock and possibly causing other system devices to enter power management modes.

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

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

Video Off Method This determines the manner by which the monitor is blanked.

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

MODEM Use IRQ Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. The choices: 3; 4; 5; 7; 9; 10; 11; NA.

Soft-Off by PWRBTN When Enabled, turning the system off by pressing the on/off button places the system in a very low-power-usage state.

State After Power Failure This field lets you determine the state that your PC returns to after a power failure. The choices: On; Off; Auto.

IRQ/Event Activity Detect

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
IRQ/Event Activity Detect

		Item Help
USB Resume from S3	Disabled	Menu Level ▸
VGA	OFF	
LPT & COM	LPT/COM	
HDD & FDD	ON	
PCI Master	OFF	
PowerOn by PCI Card	Disabled	
Wake Up On LAN/Ring	Disabled	
RTC Alarm Resume	Disabled	
×Date (of Month)	0	
×Resume (hh:mm:ss)	0 0 0	
▸IRQs Activity Monitoring	Press Enter	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

* USB Resume from S3 This item will enable you to wake-up the system by USB keyboard when you shut down the computer in S3 mode.
The choices: Enabled, Disabled.

* VGA When Enabled, you can set the VGA awakens the system.

* LPT & COM When LPT & COM is ON, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

* HDD & FDD When HDD & FDD is ON, any activity from one of the listed system peripheral devices wakes up the system.

* PCI Master When PCI Master is ON, any activity from one of the listed system devices wakes up the system.

* PowerOn by PCI Card This item allows system wake up by PCI Device.

* Wake Up On LAN/ An input signal on the serial Ring Indicator (RI) line
Ring (in other words, an incoming call on the modem)
awakens the system from a soft off state.
The choices: Enabled; Disabled.

* RTC Alarm Resume When Enabled, you can set the data at which the
RTC (Real Time Clock) alarm awakens the system
from suspend mode.
The choices: Disabled (default); Enabled.

* Date (of Month) Set a certain date when RTC Alarm Resume
option is Enabled to awaken the system. This
option is concurrent with Resume Time option.

* Resume Time (hh: Set a certain time when RTC Alarm Resume
mm:ss) option is Enabled to awaken the system. This
option is concurrent with Date option.

IRQ Activity Monitoring

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IRQ Activity Monitoring

Primary INTR	ON	Item Help
IRQ-3 (COM2)	Enabled	Menu Level ▶
IRQ-4 (COM1)	Enabled	
IRQ-5 (LPT2)	Enabled	
IRQ-6 (Floppy Disk)	Enabled	
IRQ-7 (LPT1)	Enabled	
IRQ-8 (RTC Alarm)	Disabled	
IRQ-9 (IRQ2 Redir)	Disabled	
IRQ-10 (Reserved)	Disabled	
IRQ-11 (Reserved)	Disabled	
IRQ-12 (PS/2 Mouse)	Enabled	
IRQ 13 (Coprocessor)	Disabled	
IRQ 14 (Hard Disk)	Enabled	
IRQ 15 (Reserved)	Disabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

> *** Primary INTR** When the operating system is ready to respond to the request, it interrupts itself and performs the service. When set On, activity will wake up system.

> *** IRQ-3~15** When the operating system is ready to respond to the request, it interrupts itself and performs the service. When set Enabled, activity will wake up system.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.

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4-6.7 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:

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
PnP/PCI Configurations

PNP OS Installed	No	Item Help
Reset Configuration Data	Disabled	Menu Level ▸
Resources Controlled By	Auto(ESCD)	
×IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	Enabled	
PCI SLOT1/5 IRQ Assigned	Auto	
PCI SLOT2 IRQ Assigned	Auto	
PCI SLOT3 IRQ Assigned	Auto	
PCI SLOT4 IRQ Assigned	Auto	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

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.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

PNP OS Installed Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows95).

> 👓 *NOTE: BIOS will automatically disable all PnP resources except the boot device card when you select Yes on Non-PnP operating system.*

Reset Configuration Data Normally, you leave this Disabled. Select Enabled to reset Extended System Configuration Data (ESCD), when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

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

PCI/VGA Palette Snoop This option allows the BIOS to preview VGA status, and to modify the information delivered from the feature Connector of the VGA card to MPEG card. This option can solve the display inversion to black after you have used MPEG card.

Assign IRQ for VGA Select *Enabled* if your system has a VGA controller and you have one or more VGA devices connected. If you are not using your system's VGA controller, select *Disabled* to free the IRQ resource.

Assign IRQ for USB Select *Enabled* if your system has a USB controller and you have one or more USB devices connected. If you are not using your system's USB controller, select *Disabled* to free the IRQ resource.

PCI SLOT1/5, 2, 3, 4 These options allow you to assign an IRQ for each
IRQ Assigned PCI SLOT and this is a useful function when you
want to clear the IRQ conflict for a specific device.
The options are available : Auto; 3; 4; 7; 9; 10; 11.

IRQ Resources Press Enter. Please refer to the list below:

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IRQ Resources

IRQ-3 assigned to	PCI/ISA PnP	Item Help
IRQ-4 assigned to	PCI/ISA PnP	Menu Level ▶
IRQ-5 assigned to	PCI/ISA PnP	
IRQ-7 assigned to	PCI/ISA PnP	
IRQ-9 assigned to	PCI/ISA PnP	
IRQ-10 assigned to	PCI/ISA PnP	
IRQ-11 assigned to	PCI/ISA PnP	
IRQ-12 assigned to	PCI/ISA PnP	
IRQ-14 assigned to	PCI/ISA PnP	
IRQ-15 assigned to	PCI/ISA PnP	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

3. Press <ESC> to return to the Main Menu when you finish setting up all
   items.

4-6.8 SmartDoc Anti-Burn Shield

• This section helps you to get more information about your system including CPU temperature, FAN speed and voltage. It is recommended that you contact with your mainboard supplier to get proper values about the setting of the CPU temperature.

Run the "SmartDoc Anti-Burn Shield" as follows:

1. Choose "SmartDoc Anti-Burn Shield" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
SmartDoc Anti-Burn shield

		Item Help
CPU Warning Temperature	Disabled	
Shutdown Temperature	Disabled	Menu Level ▸
CPUFan Warning Speed	Disabled	
Shutdown For CPUFan	Disabled	
CPU Vcore	0	
DDR DIMM	1	
3.3V	2	
+5V	3	
+12V	4	
-12V	5	
-5V	6	
5VSB	7	
Voltage Battery		
Temperature 1		
Temperature 2		
Fan 1 Speed		
Fan 3 Speed		

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.

   <F1>: "Help" gives options available for each item.
   <F5>: Get the previous values. These values are the values with which the user starts the current session.
   <F6>: Load all options with the BIOS default values.
   <F7>: Load all options with the Setup default values.

CPU Warning Temperature Select the combination of lower and upper limits for the CPU temperature. If the CPU temperature extends beyond either limit, any warning mechanism programmed into your system will be activated.

Shutdown Temperature This feature prevents your CPU from damage by over heat. If the CPU's temperature is higher than "CPU warning temperature" that you select in this field, the BIOS will shut down your system within 3 seconds.

CPUFan Warning Speed This feature prevents the malfunction of the CPU cooling fan. When CPU cooling fan speed is lower than value you select in this field, the BIOS will send out sequence of beeps or send out a warning message **"Your CPU FAN speed is too low"**.

Shutdown For CPUFan This feature prevents your CPU from damaging by over heat, but **"Shutdown For CPUFan"** is different from **"Shutdown For Temperature"** in that BIOS detects CPU cooling fan speed in spite of CPU Temperature being detected in this field. When CPU FAN speed is lower than the value that you select in this field, the BIOS will shutdown your system within 3 seconds.

> ◎◎ *NOTE: Enabled feature "Shutdown For CPUFan" without CPU cooling fan connecting to onboard fan connector FAN1, your system will not be able to boot.*

CPU Vcore Shows CPU core actual voltage value.

DDR DIMM Shows DDR DIMM actual voltage value.

Temperature 1/2/3 This field displays the current CPU temperature, if your computer contains a monitoring system.

FAN 1/3 Speed These fields display the current speed of up to twoCPU fans, if your computer contains a monitoring system.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.

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:

CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
Frequency/Voltage Control

		Item Help
Red Storm Overclocking	Press Enter	
CPU Vcore Select	Default	Menu Level ▸
Auto Detect DIMM/PCI ClK	Enabled	
Spread Spectrum	Disabled	
CPU Skew Adjust	Disabled	
CHIP Skew Adjust	Disabled	
PCI Skew Adjust	Disabled	
AGP Skew Adjust	Disabled	
Use CPU Linear Freq	Use Linear	
CPU Clock	100	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.

   <F1>: "Help" gives options available for each item.
   <F5>: Get the previous values. These values are the values with which the user starts the current session.
   <F6>: Load all options with the BIOS default values.
   <F7>: Load all options with the Setup default values.

Redstorm Please press <Enter> to start *RED STORM OVER-*
Overclocking *CLOCKING TECH*, this option helps user an easy
Tech way to overclocking, it will increase CPU external
clock automatically, when CPU external clock
increasing to unacceptable value, BIOS will restart
your system, then running at acceptable CPU
external clock.

CPU Vcore This item allows users to adjust the CPU Vcore
Select voltage. The instant damage of CPU is due to the
wrong Vcore voltage setting, so we highly recommend
that user should leave this item to Default setting
unless you fully understand it.

Auto Detect This item allows you to enable/disable detect DIMM/
DIMM/PCI Clk PCI Clock.
The choice: Enabled, Disabled.

Spread Spec- This item allows you to enable/disable the spread
trum spectrum modulate.
The choice: Enabled, Disabled.

CPU Skew Leave this field at default.
Adjust

CHIP Skew Leave this field at default.
Adjust

PCI Skew Adjust Leave this field at default.

AGP Skew Leave this field at default.
Adjust

Use CPU Linear If users would like to adjust CPU clock, this items
Freq must be "Linear".
The choices: Default; Linear.

CPU Clock These items allows users to adjust CPU frequency.

3. Press <ESC> to return to the Main Menu when you finish setting up all
   items.

4-6.10 Load Optimized Defaults

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

" Load Optimized Defaults (Y / N) ?   N "

Pressing "Y" loads the BIOS default values that are factor settings for
optimal performance of system operations.

4-6.11 Set Supervisor / User Password

• These two options allow you to set your system passwords. Normally, the
 supervisor has a higher priority to change the CMOS setup option than the
 users. The way to set up the passwords for both Supervisor and Users
 are as follows:

1. Choose "Change Password" in the Main Menu and press <Enter>. Then
  following message appears:

"Enter 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:

"Confirm Password :   "

4. Enter the same password "exactly" the same as you have just typed to
  confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password entered before, choose the Supervisor
  Password and press <Enter>. It will delete the password that you have
  entered before.

7. 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.

8. 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 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:

    "SAVE to CMOS and EXIT (Y/N) ? Y "

"Y" is for "Yes", and "N" is for "No".
Press <Enter> key to save the configuration changes.

4-6.13 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 (Y/N) ? N "

"Y" is for "Yes", and "N" is for "No".
You may change the prompt to "Y" and press <Enter> key to leave this option .

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Appendices

## Appendix-1 Identify BIOS Version & BIOS Part Number

• See Picture-1 below for BIOS version and BIOS part number identification.
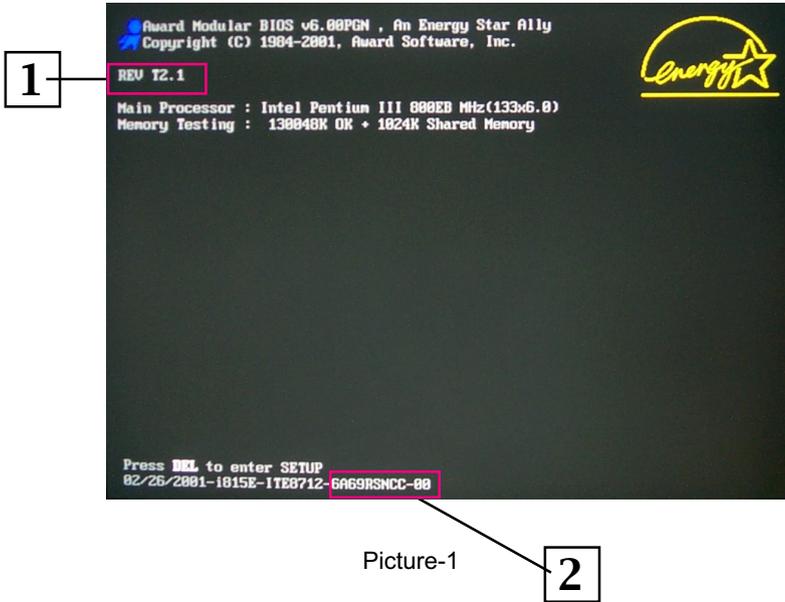
Picture-1

1. BIOS VERSION
   example: REV T2.1
2. BIOS ID STRING
   example: 6A69RSNCC

Appendix-2 Identifying Mainboard model Number

• Usually the mainboard model number is labeled on the side of ISA side of slot or PCI slot. Please see the picture below as an illustration:
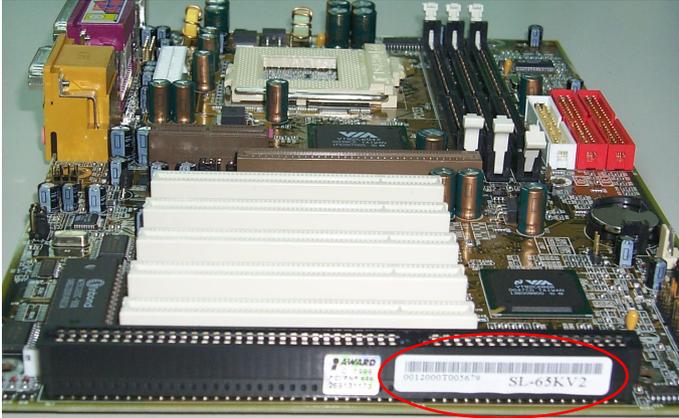
Picture-2

1. MAINBOARD MODEL NUMBER
   example: SL-65KV2

2. MAINBOARD SERIAL NUMBER
   example: 0012000T005679

Appendix-3 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 66MHz x 4byte x 2 = 528MB/s. AGP 4X mode is 66MHz x 4byte x 4 = 1056MB/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 16.6MB/s x4 = 66MB/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 (1/40ns) x 2 bytes x 2 = 100MB/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.

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 100x64/8x2=1600MB/s. PC2100 DDR SDRAM doubles the data transfer rate of PC-133 and hence provides data transfer bandwidth up to 133x64/8x2=2100MB/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.

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 important to know that RDRAM technology helps to 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 send and receive 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 reducing data access latency and reducing power consumption.

VRM (Voltage regulator Module)
This is a small module installed on a mainboard to regulate the voltage fed into 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.

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