



SL-65LIV-T USER MANUAL v1.0

NOTICE

| | |
|-----------------|---------------|
| Product Model | : SL-65LIV-T |
| Manual Revision | : V1.0 |
| Release Date | : August 2001 |

This User's Guide & Technical Reference is to help system manufacturers and end-users set up and install the mainboard.

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ITEM LIST CHECKUP

- Mainboard
- Support CD
- User's Manual
- Bundled Bonus Pack CD
- Bundled Bonus Pack Manual
- Temperature Sensor Cable
- ATA66/100 IDE Cable
- RS232 Cable
- FDD Cable

CHAPTER 1

INTRODUCTION

- This chapter briefly introduces the characteristics of this mainboard. 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 CPU

- Supporting Intel® FC-PGA370 Pentium III™ up to 1GHz.
- Supporting Intel® FC-PGA 370 Celeron up to 850MHz.
- Supporting VIA Cyrix III processors up to 800MHz.
- Supporting 66 to 200 MHz system bus speed.
- Supporting processor voltage Auto-Detect circuit.
- Supporting Intel® FC-PGA2 processors.

1-1.2 CHIPSET

- VIA VT8601T APPOLO PLE133T System controller.
- VIA VT82C686B PCI to ISA bridge.

1-1.3 AWARD BIOS V6.0

- Plug & Play V1.0.
- Flash Memory for easy upgrade.
- BIOS writing protection.
- Year 2000 compliant.
- Redstrom Overclocking Tech.

1-1.4 EXPANSION SLOTS

- Three PCI bus Mater slots.
- One ISA slot.
- Three DIMM slots.
- One AMR slot.

1-1.5 ADVANCED HIGH-PERFORMANCE DRAM CONTROLLER

- Supporting PC133 and PC100 SDRAM SDRAM up to 3 DIMMs.
- 64-bit data width and 3.3V DRAM interface.
- Supporting up to 768MB memory space.
- Different DRAM types may be used in mixed combinations.
- PCI-2.2 compliant, 32 bit 3.3V PCI interface with 5V tolerant inputs.

1-1.6 SOUND CONTROLLER

- SoundBlaster Pro Hardware and Direct Sound Ready AC'97 Digital Audio Controller with Codec Onboard.

1-1.7 MULTI-I/O FUNCTION

- Two Ultra DMA 33/66/100 Master Mode PCI EIDE ports.
- Two UART's for Complete Serial Ports.
- Dedicated IR connector:
 - 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:
 - Two FDDs connector with drive swap support .
- Universal Serial Bus connector supporting:
 - USB v1.1 and Intel Universal HCI v1.1 compatible.
 - 2 built-in USB connectors and one USB Header (USB2) which requires an optional USB cable to provide 2 more optional USB ports.
- PS/2 Keyboard connector.
- PS/2 Mouse connector.

1-1.8 INTEGRATED HIGH PERFORMANCE 2D/3D GRAPHICS CONTROLLER

- 64-bit Single Cycle 2D/3D Graphics Engine.
- Supporting 2 to 8 Mbytes of Frame Buffer.
- Integrated 24-bit 230MHz True Color DAC.
- Extended Screen Resolutions up to 1600x1200.
- Extended Text Mode 80 or 132 columns by 25/30/43/60 rows.

1-1.9 POWER MANAGEMENT

- ACPI 1.0 compliant (Advanced Configuration and Power Interface).
- APM V1.2 compliant (Legacy power management).
- Supporting ACPI POS mode (Power On Suspend).
- Supporting Wake On LAN (WOL) & Wake On Modem.
- Supporting real time clock (RTC) with date alarm, month alarm, and century field.

1-1.10 FORM FACTOR

- ATX form factor 4-layer PCB.
- Mainboard size: 24.5cm x 21.0cm.

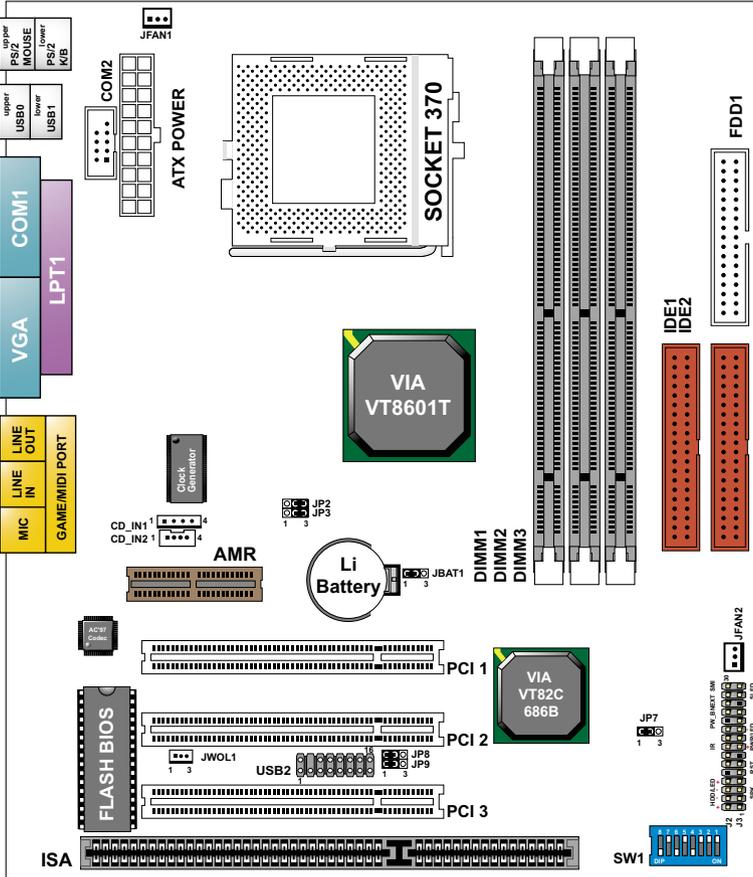
1-1.11 HARDWARE MONITOR

- Programmable control, status, to provide monitoring and alarm for flexible desktop management of hardware temperature (software provided in support CD).
- 5 positive voltage statuses monitoring.
- 2 Fan-speeds statuses monitoring.

1-1.12 OTHERS

- Clock generator supporting 1MHz linear clock setting.

1-2 MAINBOARD LAYOUT --- 65LIV-T



Using non-compliant memory with higher bus clock (over clocking) may severely compromise the integrity of system.

1-3 CHIPSET SYSTEM BLOCK DIAGRAM

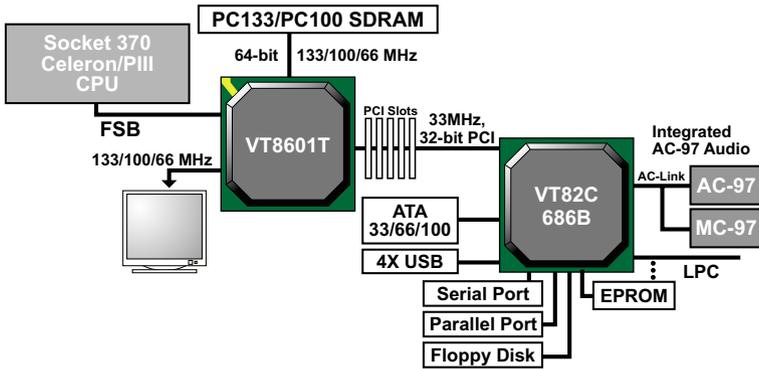


Diagram of VT8601T APOLLO PLE133T System Block with VT82C686B PCI-to-ISA South Bridge

MEMO

CHAPTER 2

HARDWARE SETUP

ATTENTION !!!

1. Please refer to your processor installation or other documentation attached with your CPU for detailed installing instruction.
2. Installing a heat sink and cooling fan is necessary for proper heat dissipation from your CPU. Uncorrected 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. Uncorrected setting may cause damage to your CPU.

This chapter contains the following topics :

2-1 CPU INSTALLATION

2-2 MEMORY INSTALLATION

2-3 HDD/FDD INSTALLATION

**2-4 SWITCH SETTING FOR CPU FREQUENCY AND
VOLTAGE**

2-5 JUMPER SETTING FOR DEVICES ON BOARD

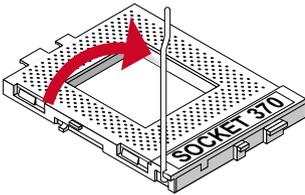
2-6 CONNECTORS CONFIGURATION

2-7 IRQ DESCRIPTION

2-1 CPU INSTALLATION

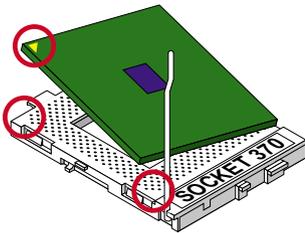
WARNING !!!

- Make sure that +5V DCV and +3.3 DCV of your power supply are suitable for the processor.
- Any attempt to operate the Celeron or PIII processor without a suitable cooling Fan will damage processor and other component.



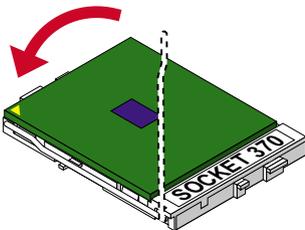
1

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 here. 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.

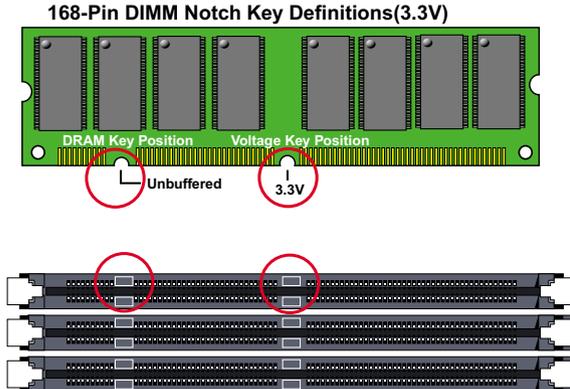
2-2 MEMORY INSTALLATION

WARNING!!!

- 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 socket improperly may damage the memory module or the socket. Some DIMMs which contain EDO or FPM DRAM are incompatible with the mainboard. The M/B supports 3.3V true 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 168-pins and two notches that will be matched by the onboard DIMM socket. 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.

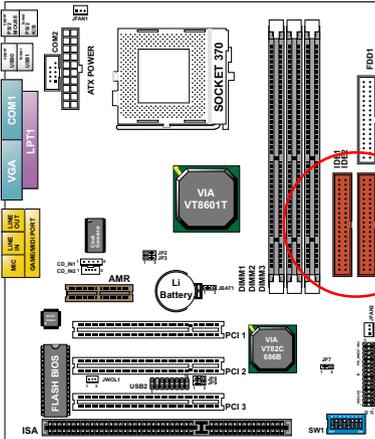


Removing DIMM

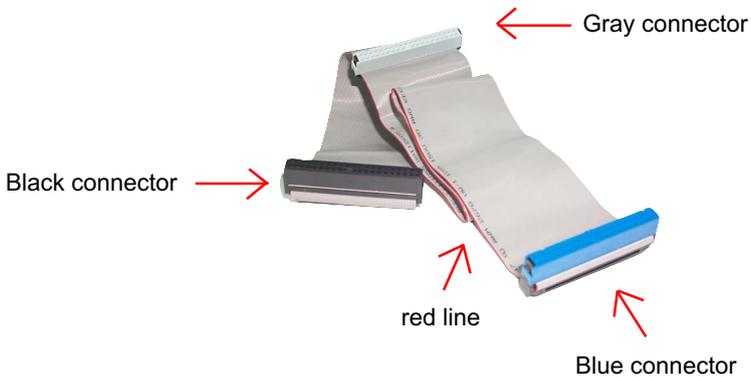
- Press down the holding clips on both sides of a DIMM socket and the module will be released from it.

2-3 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.

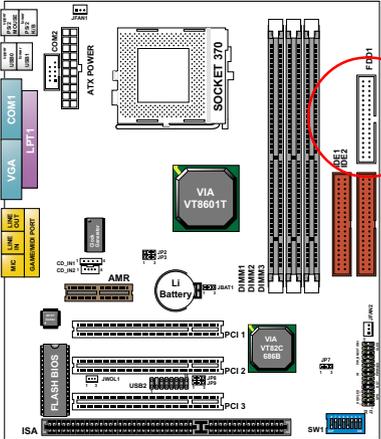


Hard Disk Drive Connector:
Orient the red markings on the IDE ribbon cable to Pin1.

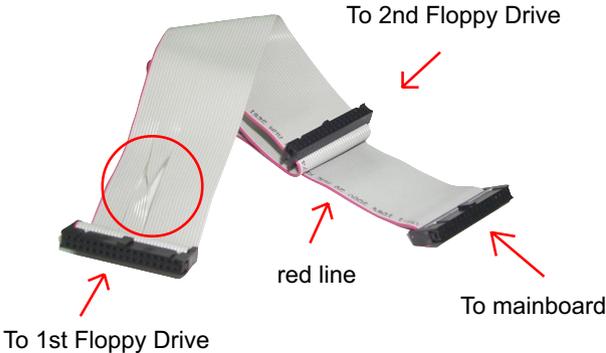


IDE Cable

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



Floppy Disk Drive Connector:
Orient the red line on the floppy ribbon cable to Pin1.

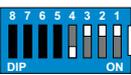
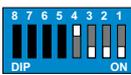
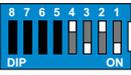
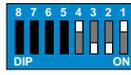
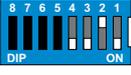
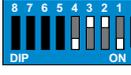
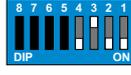
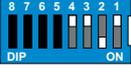


FDD Cable

2-4 SWITCH SETTING FOR CPU FREQUENCY AND VOLTAGE

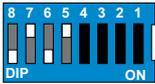
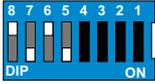
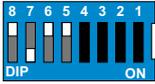
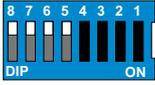
2-4.1 CPU BUS RATIO SELECT (By SW1 DIP1~DIP4)

- Normally, the Bus Ratio (Frequency Multiplier) of your processor is locked by processor's Vendor and setting of the CPU Bus Ratio will have no effect.
- The Bus Ratio Setting is available on unlocked processors only.

| SW1 DIP1 ~ DIP4 SETTING | | | | | |
|-------------------------|---|-------|---|-------|---|
| 5.5x (default) |  | 6.0x |  | 6.5x |  |
| 7.0x |  | 7.5x |  | 8.0x |  |
| 8.5x |  | 9.0x |  | 9.5x |  |
| 10.0x |  | 10.5x |  | 11.0x |  |
| 11.5x |  | 12.0x |  | | |

2-4.2 FSB Frequency SELECT (By SW1 DIP5~DIP8)

- Over clocking is not recommended, your system may work unstable.
- SW1 DIP5~8 settings for FSB (Front Side Bus) Frequency Select is a redundancy device designed for professional CPU overclocking only. Since this mainboard is designed with CPU clock auto-detection function, you are recommended to use the SW1 DIP5~8 default setting for a stable system performance. In case of CPU overclocking to higher frequency, these exists high possibility of failure due to the high complexity of components adopted on board. On the other hand, selecting a lower frequency setting for a CPU with higher frequency (e.g. select 100MHz setting for a 133MHz CPU) will also cause system failure.

| SW1 DIP5 ~ DIP8 | |
|---|--|
| 66/100/133MHz Auto Select (default) |  |
| 66MHz |  |
| 100MHz |  |
| 133MHz |  |

2-5 JUMPER SETTING FOR DEVICES ON BOARD

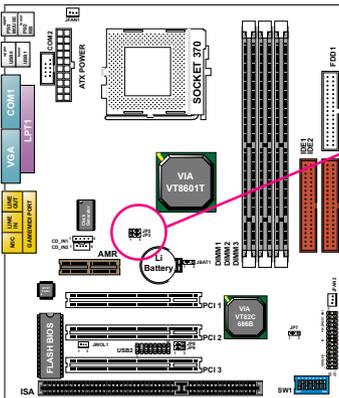
- The following diagrams show the locations of jumper blocks on the mainboard.

CAUTION

- Do not remove the jumper when power is on. Always make sure the power is off before changing any jumpers. Otherwise, mainboard could be damaged.
- All jumper pins covered with black marks are closed pins.

2-5.1 JP2/JP3 System Controller 2.5V Core Voltage Select

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

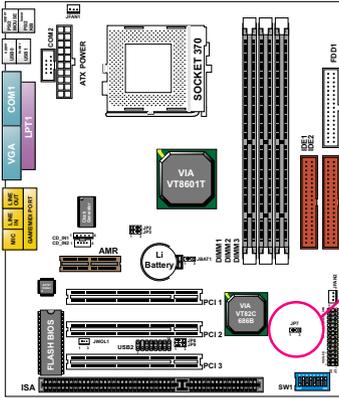


System Controller 2.5V Core Voltage Select:

| | | |
|-------------------|--|------------|
| 2.5V (default) | | JP2 JP3 |
| 2.6V | | JP2 JP3 |
| 2.7V | | JP2 JP3 |

NOTE: Using a higher voltage may boost the overclocking performance but this may result in the shortening of your computer components's life. It is strongly recommended that you leave the voltage setting at 1 default.

2-5.2 JP7 Power Lost Resume



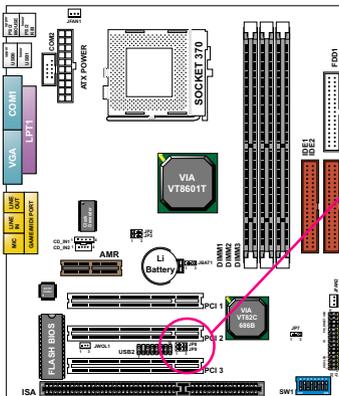
Power Lost Resume:

| | | |
|------------------|---|-----|
| Normal (default) |  | JP7 |
| Enabled |  | JP7 |

NOTE: 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.

2-5.3 JP8/JP9 USB Port Select

JP8/JP9 setting is for future use when there is a need to connect USB2 Header to AMR slot. Currently USB2 Header to AMR is not connected. Please keep JP8/JP9 default setting at 1-2 closed for enabling USB2 Header. Changing the default setting will disable USB2 Header.

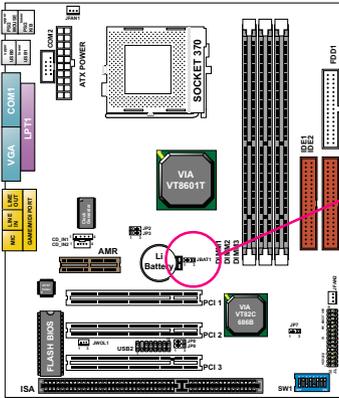


USB Port Select:

| | | |
|--|---|------------|
| Redirect USB2 Header to USB connectors (default) |  | JP8 JP9 |
| Redirect USB2 Header to AMR slot |  | JP8 JP9 |

2-5.4 JBAT1 For Clear CMOS DATA

A battery should be used to supply the power for the CMOS RAM to retain the mainboard configuration.



JBAT1 For Clear CMOS DATA:

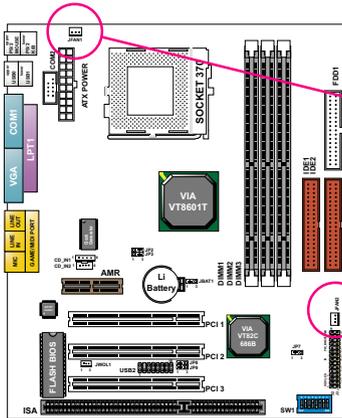
| | |
|-----------------------|---|
| Clear CMOS Data | JBAT1  |
| Retain Data (default) | JBAT1  |

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.

2-6 CONNECTORS CONFIGURATIONS

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

2-6.1 On Board FAN Connector (JFAN1, JFAN2)



On Board FAN Connector (JFAN1):

On Board FAN Connector (JFAN2):

| | |
|--------------------|---|
| CPU FAN |  JFAN1 |
| CHASSIS FAN |  JFAN2 |

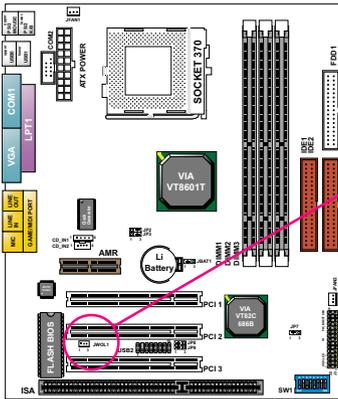


These fan connectors support CPU/chassis cooling fan with +12V. When connecting wire to FAN connectors, users should pay attention that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND. If your mainboard has 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.

NOTE 2: CPU FAN is supported by Hardware Monitor, with which a warning will be given out against high CPU temperature.

2-6.2 JWOL1 Wake On LAN



Wake On LAN:

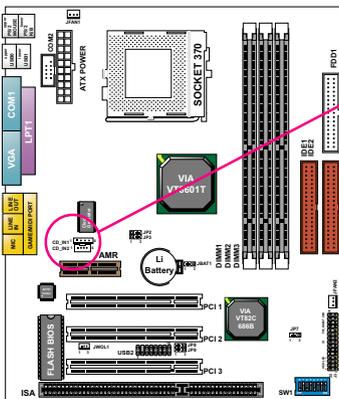
Connect the Wake On LAN signal from LAN card to JWOL1



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.

2-6.3 CD-ROM Audio Connector (CD_IN1/CD_IN2)

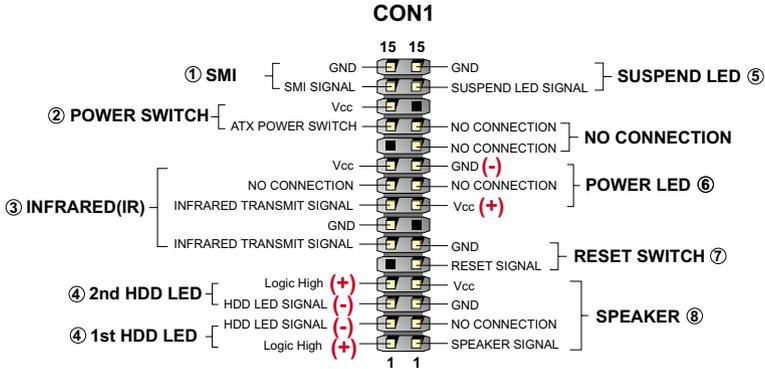


CD-ROM Audio Connector:

| PIN NO. | CD_IN1 | CD_IN2 |
|---------|---------------|---------------|
| PIN 1 | GND | Left Channel |
| PIN 2 | Left Channel | GND |
| PIN 3 | GND | GND |
| PIN 4 | Right Channel | Right Channel |

2-6.4 Complex Header CON1

- This complex Header consists of 9 connectors providing various supports:



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 / J2 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.

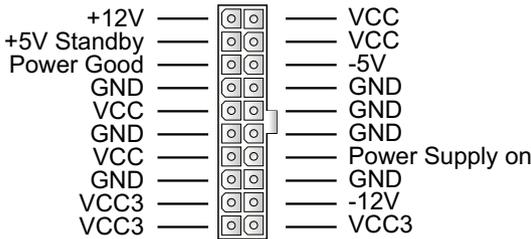
8. Speaker Connector:

CONNECTION: Connected to the case-mounted Speaker.

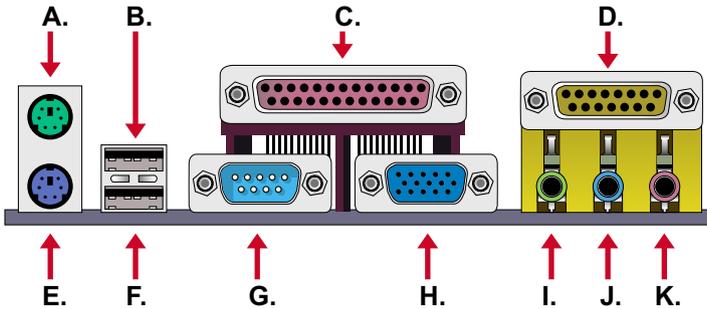
FUNCTION: To supply power to the case-mounted Speaker.

2-6.5 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.**



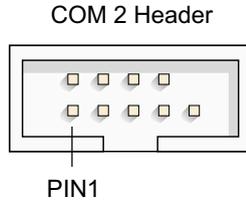
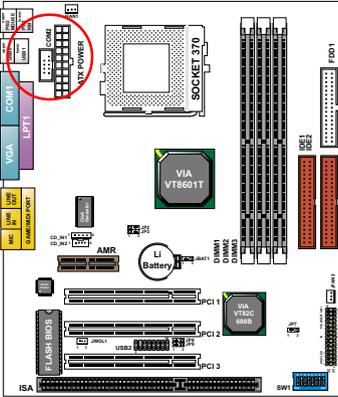
2-6.6 Chassis Panel Connector



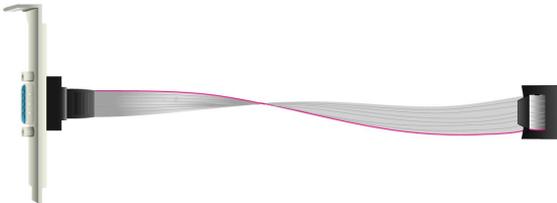
- A : PS/2 MOUSE PORT
- B : USB 0 PORT
- C : LPT1 PORT
- D : GAME/MIDI PORT
- E : PS/2 KEYBOARD PORT
- F : USB 1 PORT
- G : COM 1 PORT
- H : VGA PORT
- I : LINE OUT / SPEAKER OUT PORT
- J : LINE IN
- K : MICROPHONE

2-6.7 Serial Port Connector

- One serial port COM1 is ready for a mouse or other serial devices. A second serial port is available in the form of a 9-pin Header (COM2) to provide connection to a second serial device by an RS232 cable.



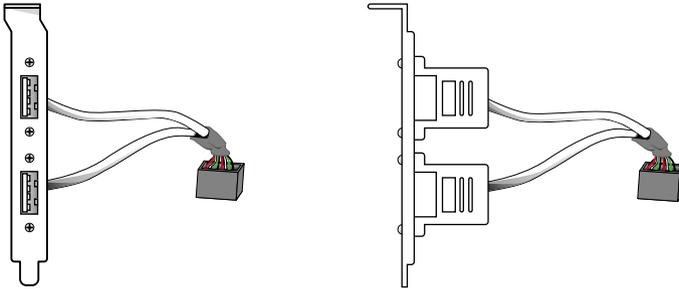
COM 2 Header:
Orient the red markings on the floppy ribbon cable to PIN1.



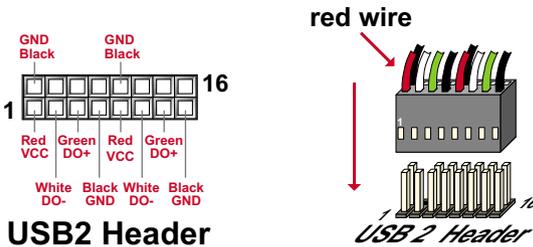
RS232 cable

2-6.8 USB2 Header

- This header is for connecting the additional USB cable to provide you additional two USB ports. User can order the additional USB cable from your mainboard dealers and vendors.

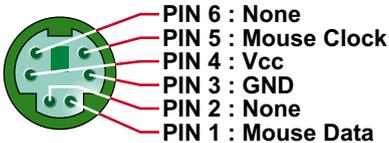


Additional USB Cable (Optional)



- When plugging the USB cable into USB2 Header, users must make sure the red wire is connected to the first pin.

2-6.9 PS/2 Mouse And PS/2 Keyboard



PS/2 MOUSE



PS/2 KEYBOARD

2-7 IRQ DESCRIPTION

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

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

MEMO

CHAPTER 3

SOFTWARE SETUP

ABOUT SUPPORT CD

- In Support CD, it contains most informations for user's requirement, such as Acrobat Reader, BIOS, User's full version Manual, Driver, Hardware Monitor (if mainboard supports this function), Patch, and Utilities etc. User can browse the CD and get further details in regard of our mainboard. Of course, welcome to vendor's website for the newest release.

This chapter contains the following topics :

3-1 VIA CHIPSET DRIVER INSTALLATION (4-IN-1 DRIVER)

3-2 ONBOARD VGA DRIVER INSTALLATION

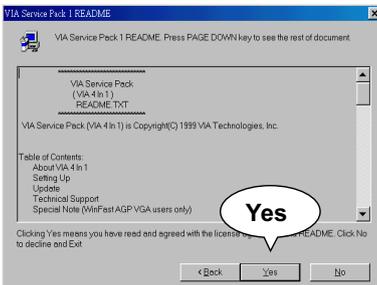
3-3 AC'97 DRIVER INSTALLATION

3-1 VIA CHIPSET DRIVER INSTALLATION (4-IN-1 DRIVER)

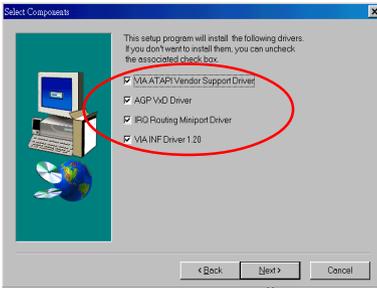
- 1 • Please put the Support CD provided in your mainboard package into the CD-ROM drive.
- 2 • When a welcome window appears on the screen, users should choose “Install Driver”.
- 3 • Click on the “VIA Chipset Driver”.
- 4 • Click on the “4-in-1 driver”.
- 5 • Click on the “Install via 4-in-1 driver” to continue.



- 6 • Press “Next” button to continue.



- 7 • Click “Yes” to continue.

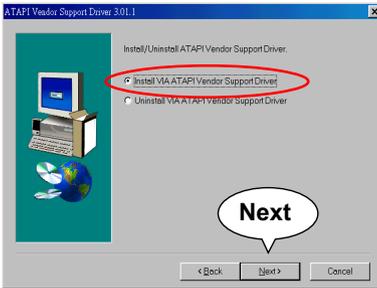


Next

8 • Press select the checkbox as below:

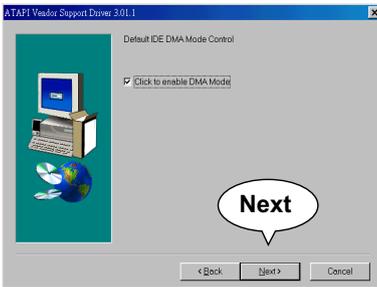
- Bus Master PCI IDE Driver
- AGP VxD Driver
- VIA Chipset Function's Registry
- IRQ Routing Miniport Driver

Note: For user who is upgrading VIA Drivers, we recommend to install the 4-in-1 as it will automatically detect and update the necessary drivers.



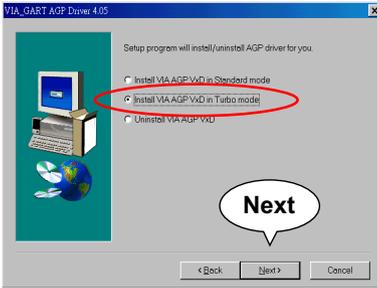
Next

9 • Select "Install VIA ATAPI Vendor Support Driver" checkbox, then click the "Next" button to continue.

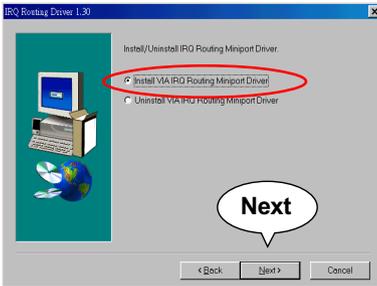


Next

10 • Click on "Click to enable DMA Mode" checkbox to enable DMA function, then click the "Next" button to continue.



- 11** • Select “**Install VIA AGP VxD**” in turbo mode and press **Next** button to continue.



- 12** • Select “**Install VIA IRQ Routing Miniport Driver**” checkbox, then click the “**Next**” button to continue.



- 13** • After all these setup procedures have finished, please restart your computer by clicking on “**Finish**”.

3-2 ONBOARD VGA DRIVER INSTALLATION

- We provide a simple process for user to install VGA driver. Whichever Microsoft Windows operating system user adopts, they have similar installation below.
-
-

3-2.1 Install PLE133T VGA Driver For Windows 95/98/SE

- | | | | |
|----------|---|----------|--|
| 1 | • Please put the Support CD provided in your mainboard package into the CD-ROM drive. | 2 | • When a welcome window appears on the screen, users should choose "Install Driver" . |
| 3 | • Click on the "VIA chipsets Driver" . | 4 | • Click on the "VIA PLE133 VGA Driver" to continue. |
| 5 | • Click on the "Install VGA Driver for Win95/98/SE" . | 6 | • Follow the instruction on screen to complete the installation, after which please restart your PC. |
-

3-2.2 Install PLE133T VGA Driver For Windows NT4.0

- | | | | |
|----------|---|----------|--|
| 1 | • Please put the Support CD provided in your mainboard package into the CD-ROM drive. | 2 | • When a welcome window appears on the screen, users should choose "Install Driver" . |
| 3 | • Click on the "VIA chipsets Driver" . | 4 | • Click on the "VIA PLE133 VGA Driver" to continue. |
| 5 | • Click on the "Install VGA Driver for NT4.0" . | 6 | • Follow the instruction on screen to complete the installation, after which please restart your PC. |

3-2.3 Install PLE133T VGA Driver For Windows ME

- 1 • Please put the Support CD provided in your mainboard package into the CD-ROM drive.
 - 2 • When a welcome window appears on the screen, users should choose “**Install Driver**”.
 - 3 • Click on the “**VIA chipsets Driver**”.
 - 4 • Click on the “**VIA PLE133 VGA Driver**” to continue.
 - 5 • Click on the “**Install VGA Driver for Windows ME**”.
 - 6 • Follow the instruction on screen to complete the installation, after which please restart your PC.
-

3-2.4 Install PLE133T VGA Driver For Windows 2000

- 1 • Please put the Support CD provided in your mainboard package into the CD-ROM drive.
- 2 • When a welcome window appears on the screen, users should choose “**Install Driver**”.
- 3 • Click on the “**VIA chipsets Driver**”.
- 4 • Click on the “**VIA PLE133 VGA Driver**” to continue.
- 5 • Click on the “**Install VGA Driver for Win2000**”.
- 6 • Follow the instruction on screen to complete the installation, after which please restart your PC.

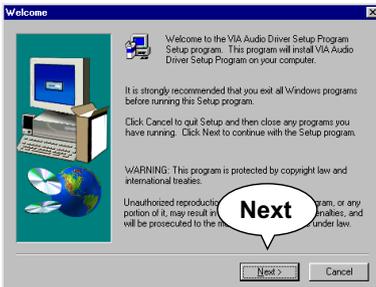
3-3 AC'97 AUDIO DRIVER INSTALLATION

1 • Please put the Support CD provided in your mainboard package into the CD-ROM drive.

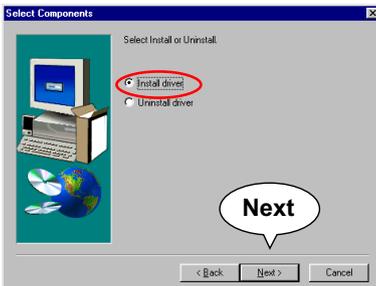
2 • When a welcome window appears on the screen, users should choose “**Install Driver**”.

3 • Click on the “**VIA Chipset Driver**”.

4 • Click on the “**AC'97 driver**”.



5 • Press “**Next**” button to continue.



6 • When asking you to install or remove the audio driver, please select “**Install**” and press “**Next**” button to continue.



7 • After all the setup process is finished, please restart your computer by clicking on “**Finish**”.

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 displays 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 provide 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, 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 from 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 to run CMOS setup utility, then reload “LOAD SETUP DEFAULTS” or **“Load Optimized Defaults”** and save this change.

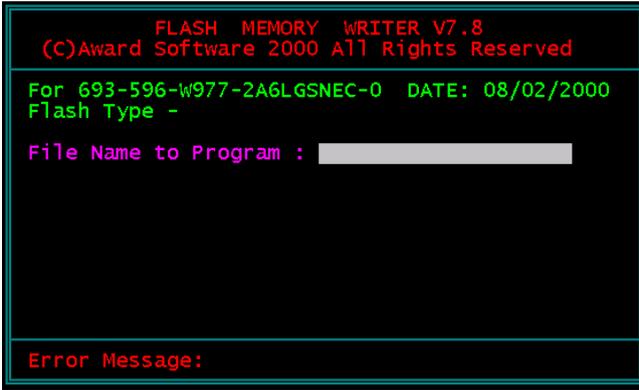


Figure 1 : Award Flash Memory Writer Start Screen

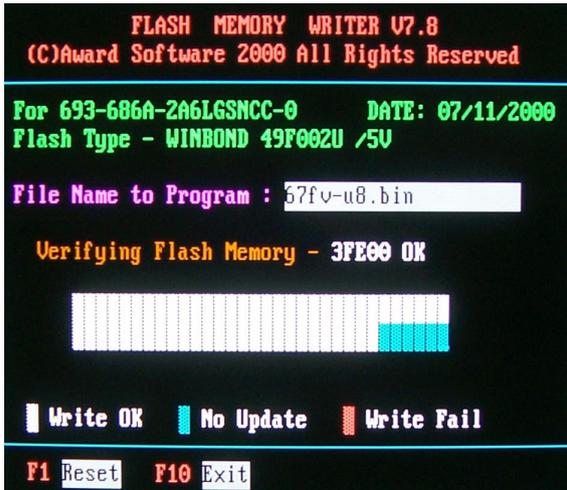


Figure 2 : Award Flash Memory Writer Start Screen

The parameters of AWDFLASH.EXE

/sn: No original BIOS backup

/py: Program flash memory

/cc: Clear CMOS and update data automatically after programming

/r : Reset system after programming

NOTE: *User can type AWDFLASH /? to get further details about parameters.*

Wrong usage of parameter will damage the BIOS information, so that we strongly recommend user to leave parameters alone unless you realize 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 TO ENTER SETUP

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

CMOS Setup Utility - Copyright (C) 1984 - 2001 Award Software

| | |
|-------------------------------|-----------------------------|
| ▶ Standard CMOS Features | ▶ Frequency/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 |
| ▶ PC Health Status | |
| 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) 1984-2001 Award Software
Standard CMOS Features

| | | Item Help |
|------------------------|---------------------|--------------|
| Date (mm:dd:yy) | Mon, January 1 2001 | Menu Level ▶ |
| Time (hh:mm:ss) | 9 : 52 : 15 | |
| ▶ 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) 1984-2001 Award Software
IDE Primary Master

| | | Item Help |
|--------------------------------|--------------|---------------|
| IDE HDD Auto-Detection | Press Enter | Menu Level ▶▶ |
| IDE Primary Master Access Mode | Auto 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:
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.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Advanced BIOS Features

| | | Item Help |
|------------------------------|----------|--------------|
| Virus Warning | Disabled | Menu Level ▶ |
| CPU Internal Cache | Enabled | |
| External Cache | Enabled | |
| CPU L2 Cache ECC Checking | Enabled | |
| Processor Number Feature | 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 | Enabled | |
| 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 | |
| C8000-CBFFF Shadow | Disabled | |
| CC000-CFFFF Shadow | Disabled | |
| D0000-D3FFF Shadow | Disabled | |
| D4000-D7FFF Shadow | Disabled | |
| D8000-DBFFF Shadow | Disabled | |
| DC000-DFFFF Shadow | Disabled | |

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

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/
External Cache** Cache memory is additional memory that is much 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
Checking** When you select *Enabled*, it will speed up memory checking when the external cache contains ECC SRAMs.
The choices: Enabled; Disabled.

**Processor Number
Feature** Choose Disabled or Enabled. When enabled, the processor serial number will display during the boot up screen.

**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 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.

C8000-CBFFF to DC000-DFFFF Shadow These options are used to shadow other expansion card ROMs.

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:

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Advanced Chipset Features

| | | Item Help |
|-------------------------|----------|--------------|
| DRAM Clock | Host CLK | |
| DRAM Timing by SPD | Disabled | Menu Level ▶ |
| SDRAM Cycle Length | 3 | |
| Bank Interleave | Disabled | |
| Memory Hole | Disabled | |
| P2C/C2P Concurrency | Enabled | |
| Fast R-W Turn Around | Enabled | |
| System BIOS Cacheable | Disabled | |
| Video RAM Cacheabl | Disabled | |
| Frame Buffer Size | 8M | |
| AGP Aperture Size | 64M | |
| OnChip USB | Enabled | |
| OnChip USB 2 | Enabled | |
| USB Keyboard Support | Disabled | |
| OnChip Sound | Enabled | |
| OnChip Modem | Enabled | |
| CPU to PCI Write Buffer | Enabled | |
| PCI Dynamic Bursting | Enabled | |
| PCI Master 0 WS Write | Enabled | |
| PCI Delay Transaction | Enabled | |
| PCI#2 Access #1 Retry | Disabled | |
| AGP Master 1 WS Write | Disabled | |
| AGP Master 1 WS Read | Disabled | |
| Memory Parity/ECC Check | Disabled | |

↑ ↓ → ← : 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.

DRAM Clock This item allows you to control the DRAM speed.
The choices: Host Clock; HCLK+33M; HCLK-33M.

DRAM Timing by SPD When this item is 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.

SDRAM Cycle Length Select CAS latency time in HCLKs of 2 or 3. The system designer already set the values. Do not change the default value unless you change specifications of the installed DRAM or the installed CPU.

Bank Interleave Please use default setting.
The choices: Disabled; 2 Bank; 4 Bank.

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.

P2C/C2P Concurrency This item allows you to enable/disable the PCI to CPU, CPU to PCI concurrency.
The choices: Enabled; Disabled.

Fast R-W Turn Around This item controls the DRAM timing. It allows you to enable / disable the fast read / write turn around.
The choices: Enabled; 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 to AFFFFh, resulting in better video performance.
However, check your AGP manual to find out if any compatibility problem exists.
- Frame Buffer size** This option allows you select memory size shared to on-chip graphics.
- 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.
- OnChip USB/USB2** This should be enabled if our system has a USB installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature. The choices: Enabled; Disabled.
- USB Keyboard Support** Enable function when the USB keyboard is being used. When the AT keyboard is being used, choose disabled.
The choices:Enabled; Disabled.
- OnChip Sound** Select Enabled to use the on-chip Audio capability of your system. Most of the following field do not appear when this field is Disabled. For user who wants to use another sound card, this field must be Disabled.
- OnChip Modem** Select Enabled to use the on-chip Modem capability of your system. This field must be Disabled, if there is NO AMR modem card installed.
The choices: Auto; Disabled.

- CPU to PCI Write Buffer** When this field is Enabled, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.
The choices: Enabled; Disabled.
- PCI Dynamic Bursting** When Enabled, every write transaction goes to the write buffer. Bursting transactions then burst on the PCI bus and non-bursting transactions don't.
The choices: Enabled; Disabled.
- PCI Master 0 Write** When Enabled, writes to the PCI bus are executed with zero wait states.
The choice: Enabled, Disabled.
- PCI Delay Transaction** Leave this field at default
The choice: Enabled, Disabled.
- PCI # 2 Access # 1 Retry** Leave this field at default
The choice: Enabled, Disabled(default).
- AGP Master 1 Write** Leave this field at default
The choice: Enabled, Disabled(default).
- AGP Master 1 Write Read** Leave this field at default
The choice: Enabled, Disabled(default).
- Memory Parity/ECC Check** This item enabled to detect the memory parity and Error Checking & Correcting.
The choices: Enabled; Disabled.

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:
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.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
 Integrated Peripherals

| | | |
|---------------------------|----------|--------------|
| On-Chip IDE Channel 0 | Enabled | Item Help |
| On-Chip IDE Channel 1 | 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 | |
| Init Display First | PCI Slot | |
| IDE HDD Block Mode | Enabled | |
| Onboard FDD Controller | Enabled | |
| Onboard Serial Port 1 | Auto | |
| Onboard Serial Port 2 | Auto | |
| UART 2 Mode | Standard | |
| × IR Function Duplex | Half | |
| × TX, RX inverting enable | No, Yes | |
| Onboard Parallel Port | 378/IRQ7 | |
| Onboard Parallel Mode | Normal | |
| ECP Mode Use DMA | 3 | |
| Parallel Port EPP Type | EPP1.9 | |
| Onboard Legacy Audio | Enabled | |
| Sound Blaster | Disabled | |
| SB I/O Base Address | 220H | |
| SB IRQ Select | IRQ 5 | |
| SB DMA Select | DMA 1 | |
| MPU-401 | Disabled | |
| MPU-401 I/O Address | 330-333H | |
| Game Port (200-207H) | Enabled | |

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

OnChip 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 prefetching for faster drive accesses. If the IDE device doesn't support prefetching, 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.

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.
The choices: PCI Slot; AGP.

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.

Onboard FDD 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 / Port2 Select an address and corresponding interrupt for the first and second serial ports.
The choices: 3F8/IRQ4; 2E8/IRQ3; 3E8/IRQ4; 2F8/IRQ3; Disabled; Auto.

UART 2 Mode 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.

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

TX, RX inverting enable This item allows you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting.
The choices: "No, No"; "No, Yes"; "Yes, No"; "Yes, Yes".

Onboard Parallel Port Select a logical LPT port name and matching address for the physical parallel (printer) port.
The choices: 378H/IRQ7; 278H/IRQ5; 3BC/IRQ7; Disabled.

Onboard Parallel Mode Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and software both support one of the other available modes.
The choices: SPP; EPP; ECP; ECP + EPP.

ECP Mode Use DMA Select a DMA channel for the parallel port for use during ECP mode.
The choices: 3; 1.

Parallel Port EPP Type Select EPP port type 1.7 or 1.9
The choices: EPP1.7; 1.9.

Onboard Legacy Audio This field controls the on-board audio.

- Sound Blaster
- SB I/O Base Address
- SB IRQ Select
- SB DMA Select
- MPU-401
- MPU-401 I/O Address
- Game Port (200-207H)

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) 1984-2001 Award Software
Power Management Setup

| | | |
|--------------------|-----------------|--------------|
| ACPI Function | Enabled | Item Help |
| ▶ Power Management | Press Enter | Menu Level ▶ |
| ACPI Suspend Type | S1 (POS) | |
| PM Control by APM | Yes | |
| Video Off Option | Suspend --> Off | |
| Video Off Method | V/H SYNC+Blank | |
| MODEM Use IRQ | 3 | |
| Soft-Off by PWRBTN | Instand-Off | |
| ▶ Wake Up Events | 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.

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 supports ACPI.

POWER MANAGEMENT

- When this option is chosen, the following item appears for user's configuration.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Power Management

| | | |
|------------------|-------------|--------------|
| Power Management | User Define | Item Help |
| HDD Power Down | Disable | Menu Level ▶ |
| Doze Mode | Disable | |
| Suspend Mode | Disable | |

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

- * **Power Management** This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes.

This table describes the power management modes for your reference:

| | |
|-------------|--|
| 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.

*** Doze Mode** After the selected period of system inactivity, the CPU clock runs at slower speed while all other devices still operate at full speed.

*** 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.

ACPI Suspend Type This item shows ACPI suspend type.

PM Control by APM If Advanced Power Management (APM) is installed on your system, selecting “Yes” gives better power savings.
The Choices: Yes; No.

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 in which the monitor is blanked.

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

MODEM Use IRQ This determines the IRQ which the MODEM can use. The choices: 3; 4; 5; 7; 9; 10; 11; NA.

Soft-Off by PWRBTN When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

WAKE UP EVENTS

- When this option is chosen, the following item appears for user's configuration.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
 IRQ/Event Activity Detect

| | | |
|----------------------------|-------------|--------------|
| VGA | OFF | Item Help |
| LPT & COM | LPT/COM | Menu Level ▶ |
| HDD & FDD | ON | |
| PCI Master | OFF | |
| Wake Up On LAN/Ring | Disabled | |
| RTC Alarm Resume | Disabled | |
| × Date (of Month) | 0 | |
| × Resume Time (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

- * **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 peripheral devices wakes up the system.

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

* **RTC Alarm Resume** When Enabled, you can set the data and time at which the RTC (Real Time Clock) alarm awakens the system from suspend mode.
The choices: Disabled; 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:mm:ss)** Set a certain time when RTC Alarm Resume option is Enabled to awaken the system. This option is concurrent with Date option.

* **IRQ Activity Monitoring**

The following is a list of IRQ's (Interrupt Requests), which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service. When set On, activity will neither prevent the system from going into a power management mode nor awaken it.

- When this option is chosen, the following item appears for user's configuration.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
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 set to on, any event occurring at will awaken a system which has been powered down.
On(default):The system can not enter the power saving mode when I/O ports or IRQ# is activated.
Off:The system still can enter the power saving mode when I/O ports or IRQ# is activated.

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

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) 1984-2001 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 | |
| × DMA Resources | Press Enter | |
| PCI/VGA Palette Snoop | | |
| Assign IRQ For VGA | Disabled | |
| Assign IRQ For USB | Enabled | |
| PCI SLOT1/5 IRQ Assigned | Enabled | |
| PCI SLOT2/6 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.

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

CMOS Setup Utility - Copyright (C) 1984 - 2001 Award Software
 IRQ Resources

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

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

DMA Resources Press Enter. Please refer to the below list.

CMOS Setup Utility - Copyright (C) 1984 - 2001 Award Software
DMA Resources

| | | |
|-------------------|-------------|--------------|
| DMA-0 assigned to | PCI/ISA PnP | Item Help |
| DMA-1 assigned to | PCI/ISA PnP | Menu Level ▶ |
| DMA-3 assigned to | PCI/ISA PnP | |
| DMA-5 assigned to | PCI/ISA PnP | |
| DMA-6 assigned to | PCI/ISA PnP | |
| DMA-7 assigned to | PCI/ISA PnP | |

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

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 you system has a VGA controller and you have one or more USB 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 you 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, 2/6, 3, 4 IRQ Assigned These options allow you to assign an IRQ for each 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.

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

4-6.8 PC HEALTH STATUS

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

Run the “PC Health Status” as follows:

1. Choose “PC Health Status” from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
PC Health Status

| | |
|-----------------------|--------------|
| Current CPUFAN1 Speed | Item Help |
| Current CPUFAN2 Speed | Menu Level ▶ |
| Vcore | |
| 2.5V | |
| 3.3V | |
| 5V | |
| 12V | |

↑↓→←: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.

Current CPU FAN1 Speed Shows current CPU FAN1 speed. The fan must provide rotary pulse. (Normally these types of fan have a three-wire connector)

Current CPUFAN2 Speed Shows current CPUFAN2 speed. The fan must provide rotary pulse. (Normally these types of fan have a three-wire connector)

Vcore/2.5V/3.3V/5V/1.2V Shows power supply actual voltage value.

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) 1984-2001 Award Software
 Frequency/Voltage Control

| | | |
|--------------------------|-------------|--------------|
| Red Storm Overclocking | Press Enter | Item Help |
| Auto Detect DIMM/PCI Clk | Enabled | Menu Level ▶ |
| Spread Spectrum | Disabled | |
| CPU Clock | 100MHz | |
| CPU Skew Adjust | Disabled | |
| CHIP Skew Adjust | Disabled | |
| PCI Skew Adjust | Disabled | |
| SDRAM Skew Adjust | Disabled | |

↑↓←→: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 in-
 creasing to unacceptable value, BIOS will restart
 your system, then running at acceptable CPU ex-
 ternal clock.

Auto Detect DIMM/PCI CLK To reduce the occurrence of electromagnetic interference (EMI), the BIOS detects the presence or absence of components in DIMM and PCI slots and turns off system clock generator pulses against empty slots.

Spread Spectrum Modulated When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

CPU Clock This items allows users to adjust CPU fequency.

CPU Skew Adjust This item allows you to reduce CPU transfer rate. Users should leave this item at default value. The choices: Disabled; 150ps; 300ps; 450ps.

CHIP Skew Adjust Leave this field at default.

PCI Skew Adjust This item allows you to reduce PCI transfer rate. Users should leave this item at default value. The choices: Disabled; 150ps; 300ps; 450ps.

SDRAM Skew Adjust This item allows you to reduce SDRAM transfer rate. Users should leave this item at default value. The choices: Disabled; 150ps; 300ps; 450ps.

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 ```

“Y” is for “Yes”, and “N” is for “No”.

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 .

**MEMO**

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# ***APPENDICES***

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**APPENDIX-1 TECHNICAL TERMS  
APPENDIX-2 IDENTIFYING BIOS VERSION/  
BIOS PART NUMBER  
APPENDIX-3 IDENTIFYING MAINBOARD  
MODEL NUMBER**

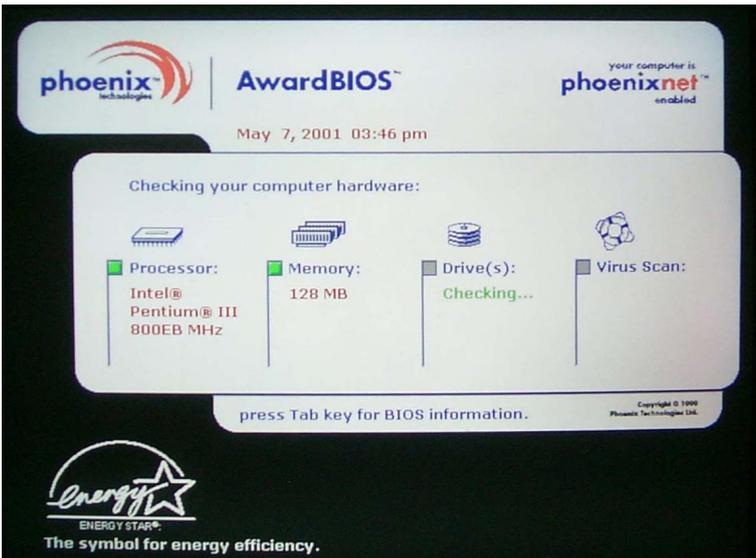
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## APPENDIX-1 TECHNICAL TERMS

| <b>Technical Terms Introduction</b> |                                                |
|-------------------------------------|------------------------------------------------|
| <b>Tech Term</b>                    | <b>Meaning</b>                                 |
| <b>AGP</b>                          | <b>Accelerated Graphic Port</b>                |
| <b>AMR</b>                          | <b>Audio Modem Riser</b>                       |
| <b>ACR</b>                          | <b>Advanced Communication Riser</b>            |
| <b>CPU</b>                          | <b>Central Processing Unit</b>                 |
| <b>CMOS</b>                         | <b>Complementary Metal Oxide Semiconductor</b> |
| <b>CRIMM</b>                        | <b>Continuity RIMM</b>                         |
| <b>CNR</b>                          | <b>Communication and Networking Riser</b>      |
| <b>DMA</b>                          | <b>Direct Memory Access</b>                    |
| <b>DMI</b>                          | <b>Desktop Management Interface</b>            |
| <b>DIMM</b>                         | <b>Dual Inline Memory Module</b>               |
| <b>DRAM</b>                         | <b>Dynamic Random Access Memory</b>            |
| <b>DDR</b>                          | <b>Double Data Rate</b>                        |
| <b>ECP</b>                          | <b>Extended Capabilities Port</b>              |
| <b>ESCD</b>                         | <b>Extended System Configuration Data</b>      |
| <b>ECC</b>                          | <b>Error Check and Correct</b>                 |
| <b>EPP</b>                          | <b>Enhanced Parallel Port</b>                  |
| <b>FDD</b>                          | <b>Floppy Disk Device</b>                      |
| <b>IDE</b>                          | <b>Integrated Dual Channel Enhanced</b>        |
| <b>IRQ</b>                          | <b>Interrupt ReQuest</b>                       |
| <b>I/O</b>                          | <b>Input/Output</b>                            |
| <b>LAN</b>                          | <b>Local Area Network</b>                      |
| <b>LBA</b>                          | <b>Logical Block Addressing</b>                |
| <b>LED</b>                          | <b>Local Emitting Diode</b>                    |
| <b>MHz</b>                          | <b>Megahertz</b>                               |
| <b>PNP</b>                          | <b>Plug &amp; Play</b>                         |
| <b>USB</b>                          | <b>Universal Serial Bus</b>                    |
| <b>VCM</b>                          | <b>Virtual Channel Memory</b>                  |

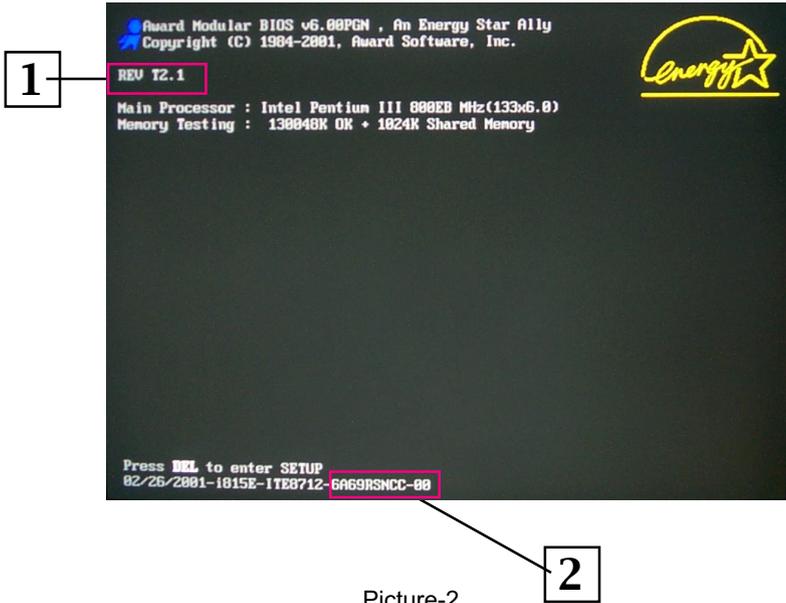
## APPENDIX-2 IDENTIFYING BIOS VERSION AND BIOS PART NUMBER

- When you boot up your computer, you may see a screen which shows your computer is phoenixnet™ enabled. Please see Picture-1 below for an illustration.
- When the screen shows up press “Tab” key for BIOS information.



Picture-1

- See Picture-2 below for BIOS version and BIOS part number identification.

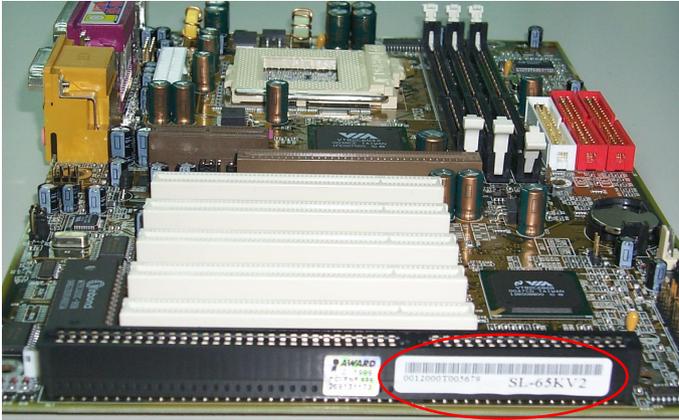


Picture-2

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

### APPENDIX-3 IDENTIFYING MAINBOARD MODEL NUMBER

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



1. MAINBOARD MODEL NUMBER  
example: SL-65KV2
2. MAINBOARD SERIAL NUMBER  
example: 0012000T005679

**MEMO**

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