



SL-68C/68C+

V1.2

USER MANUAL

USER NOTICE

Product Model	: SL-68C/68C+
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This Users Guide & Technical Reference is for assisting system manufacturers and end-users in setting up and installing the mainboard.

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CHAPTER 1

INTRODUCTION

1-1 ITEM LIST CHECKUP

- Motherboard
- Support CD
- User's Manual
- Bundle Bonus Pack CD
- Bundle Bonus Pack Manual
- ATA 66/100 IDE Cable
- FDD Cable

1-2 PROCESSOR

- Supports Dual Intel® FC-PGA Pentium !!!™ up to 1GHz or above.
- Supports Single Intel® FC-PGA 370 Celeron & PGA 370 Celeron up to 700MHz or above.
- Supports Single VIA Cyrix !!! up to 600MHz or above.
- Supports CPU voltage Auto-Detect circuit.

1-3 CHIPSET

- North Bridge - VIA VT82C694X APOLLO PRO 133A
- South Bridge - VIA VT82C686B

1-4 ADVANCED HIGH PERFORMANCE DRAM

CONTROLLER

- Supports FP, SDRAM, and VCM SDRAM memory types up to 3 DIMMs
- 64-bit data width and 3.3V DRAM interface
- Supports up to 1.5 GB 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
- DRAM interface synchronous with host CPU (66/100/133) or AGP (66MHz) for most flexible configuration
- DRAM interface may be faster than CPU by 33MHz to allow use of PC100 memory modules with 66MHz Celeron or use of PC133 with 100MHz Pentium II or Pentium III

68C / 68C+

- DRAM interface may be slower than CPU by 33MHz to allow use of older memory modules with newer CPUs (e.g., PC66 memory modules with 100MHz Pentium III)

1-5 FULL FEATURED ACCELERATED GRAPHICS

PORTS (AGP) CONTROLLER

- Synchronous and pseudo-synchronous with the host CPU bus with optimal skew control PCI AGP Mode 33MHz/66MHz/100MHz DDR 3x synchronous
- Supports 66MHz 1x, 2x and 4x modes for AD and SBA signaling
- AGP v2.0 compliant

1-6 MULTI-I/O FUNCTION

- Built-in Two UltraDMA-33/66 Master Mode PCI EIDE ports
- Two UARTs for complete Serial Ports
- One 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:
 - Standard mode, ECP and EPP support
- Floppy Disk connector:
 - Two FDDs with drive swap support
- Universal Serial Bus connector:
 - USB v1.1 and Intel Universal HCI v1.1 compatible
 - Provides 2 build-in USB ports (another 2 internal USB ports for extensible purpose require an optional USB connect cable)
- PS/2 keyboard connector
- PS/2 Mouse connector

1-7 ON-BOARD HIGH POINT 370 ATA/ATAPI CONTROLLER

(OPTIONAL FOR 68C+ ONLY)

- Ultra DMA 100MB/S operation per ATA channel.
- One PCI function supports two independent ATA channels.
- Supports all ATAPI CD-ROM, DVD-ROM, CD-R, CD-RW, LS-120, MO, Tape and ZIP devices.
- Supports up to 4 IDE devices.(Coexist with on-board IDE)
- RAID function supported (RAID 0, 1, 0+1).

1-8 EXTENSION SLOTS

- Five PCI bus Master slots
- One AGP Pro 4x mode slot
- Three DIMM slots

1-9 BIOS

- Award BIOS V6.0
- Supports Plug & Play V1.0
- Flash Memory for easy upgrade
- Year 2000 compliant
- Supports BIOS writing protection

1-10 SOUND CONTROLLER

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

1-11 POWER MANAGEMENT

- ACPI 1.0 compliant (Advanced Configuration and Power Interface)
- APM V1.2 compliant (legacy power management)
- System event monitoring with two event classes
- Supports Wake On LAN (WOL) & Wake On Modem
- Supports real time clock (RTC) with date alarm, month alarm, and century field

1-12 FROM FACTOR

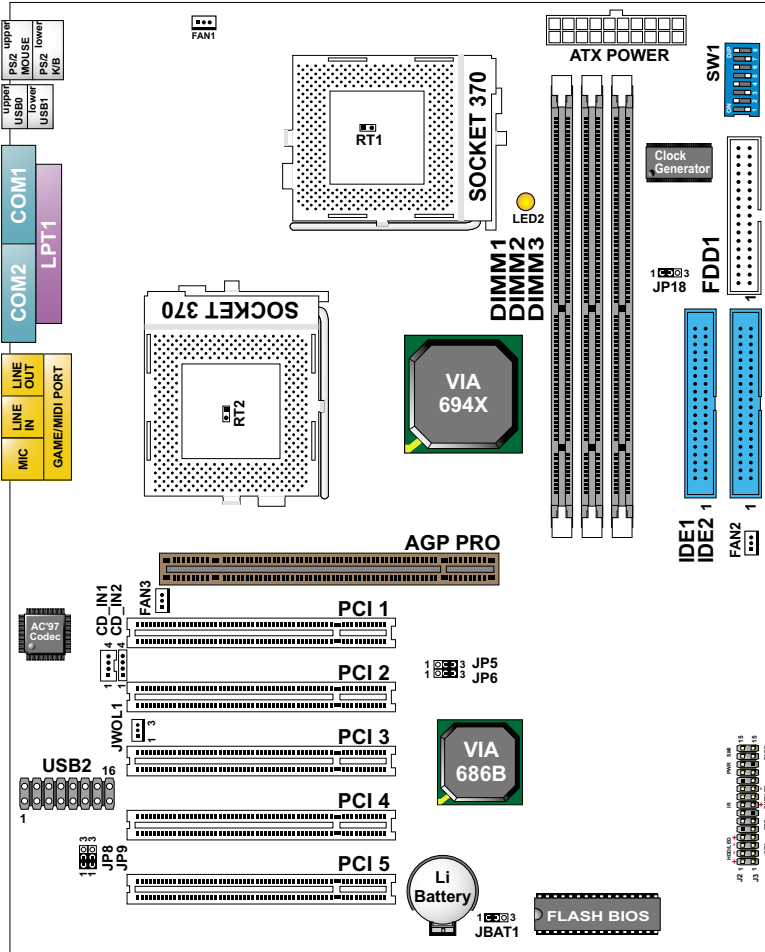
- ATX from factor, 4 layers PCB
- Motherboard size 24.5cm x 30.5cm

1-13 HARDWARE MONITORING

- Programmable control, status, monitor and alarm for flexible desktop management (software include)
- Five-positive voltage monitoring
- Two-temperature monitoring
- 3 Fan-speed monitoring

1-14.1 MOTHERBOARD LAYOUT --- 68C

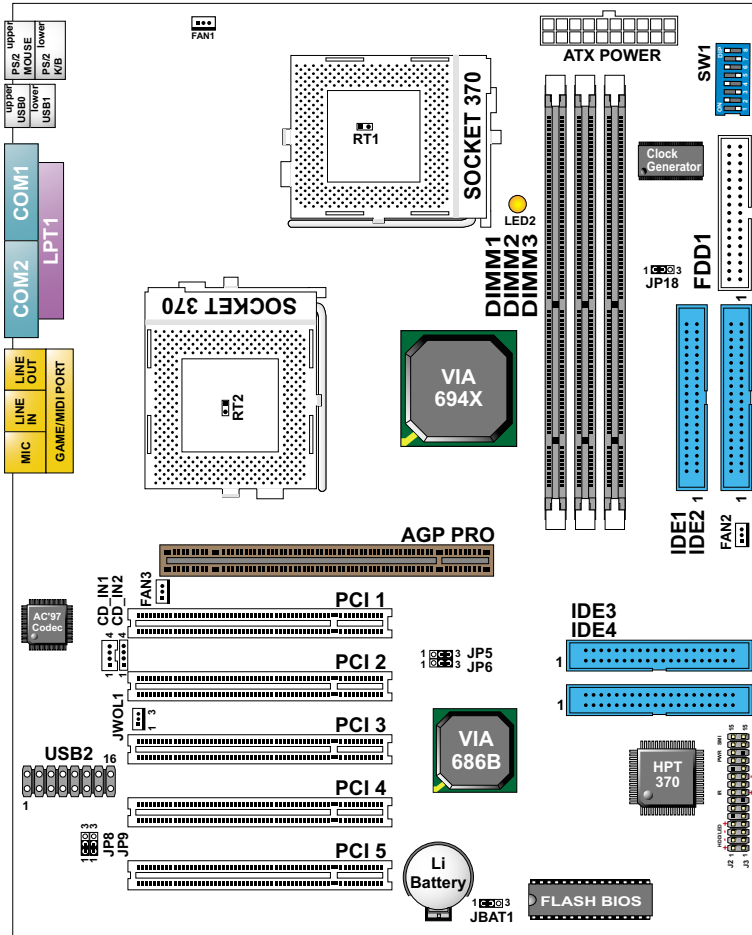
- Default Setting: Intel Celeron 300A/66 MHz



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

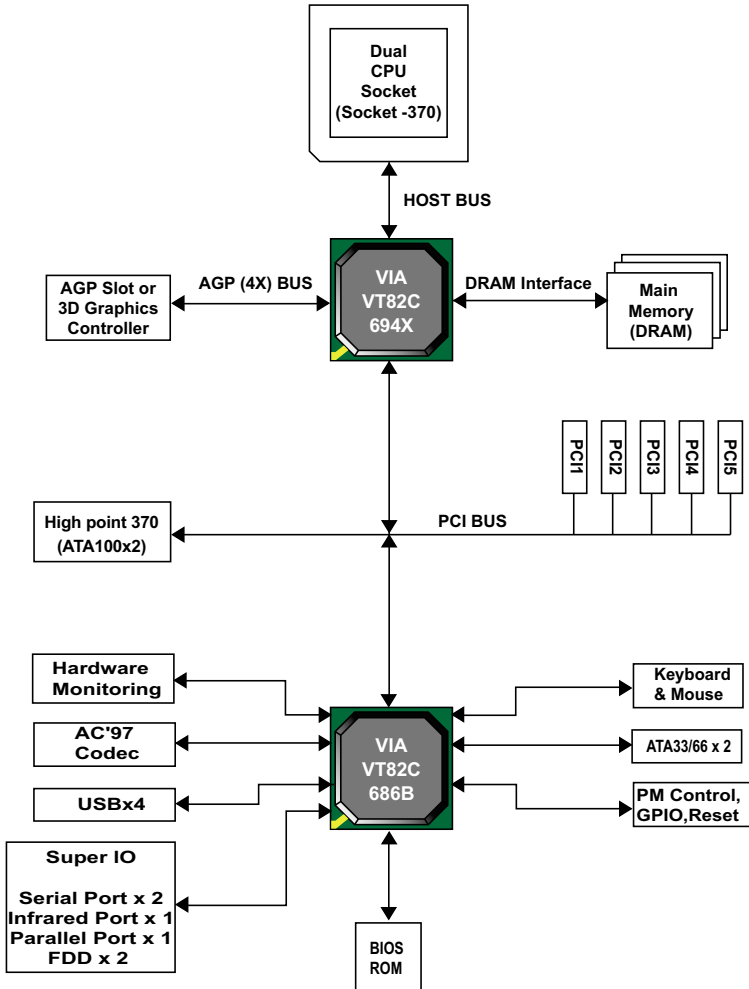
1-14.2 MOTHERBOARD LAYOUT --- 68C+

- Default Setting: Intel Celeron 300A/66 MHz



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

1-15 CHIPSET SYSTEM BLOCK DIAGRAM



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.

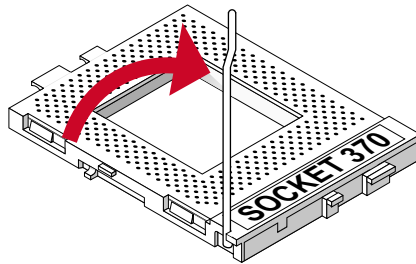
CHAPTER 2

HARDWARE SETUP

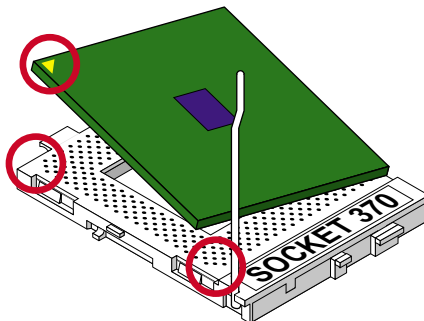
2-1 CPU INSTALLATION

(Note : When installing only one CPU, Socket 370 terminator is unnecessary to install, you can put it on any 370 socket, whatever you want.)

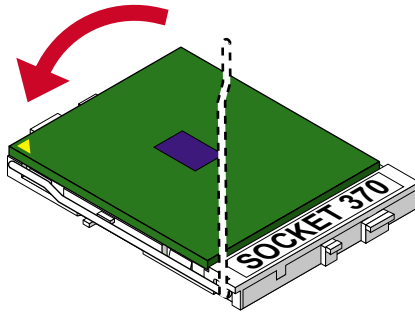
1. Pull the lever sideways away from the socket, and then raise the lever up to a 90-degree angle.



2. Take note of the red circle as below picture. When insert the CPU into socket, you can find out there is a definite pin orientation for CPU and socket.



3. Make sure that the CPU positions in the socket tightly, and then put the lever down to complete the CPU installation.



2-2 MEMORY INSTALLATION

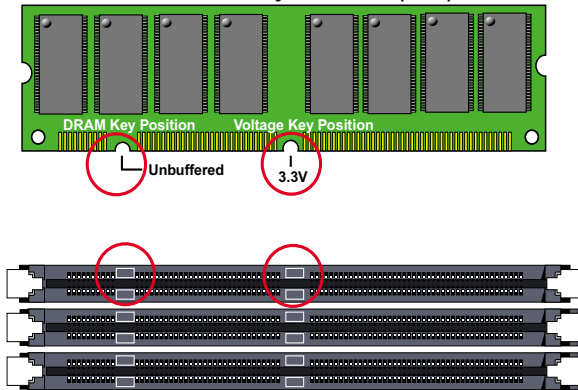
WARNING!!!

- Make sure that you unplug your power supply when 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 can be damaged the memory module or the socket. Some of DIMMs contain EDO or FTP DRAM that accept only 5V power. These DIMM types are incompatible with the motherboard, the M/B only supports 3.3V true SDRAM DIMMs

Installing DIMM

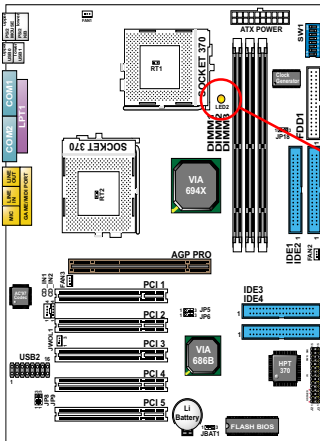
- Make sure you have the correct memory module type for your motherboard.
- Insert the module(s) as shown, DIMMs have 168-pins and two notches that will match with the onboard DIMM socket, memory modules are installed by inserting them straight into the slot until they “click” into place. They only fit in one direction so do not force them into place.

168-Pin DIMM Notch Key Definitions(3.3V)



Removing DIMM

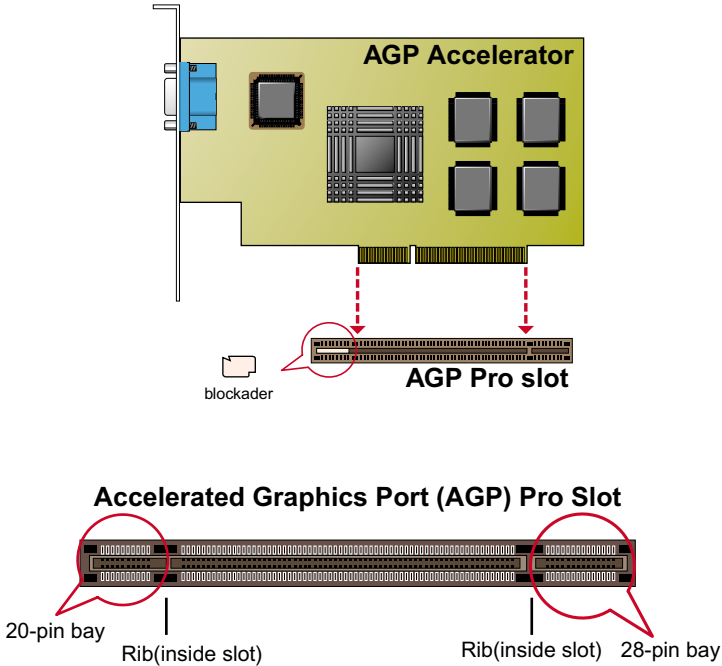
- Press the holding clips on both sides of socket out ward to release the DIMM out of the socket.



NOTICE : When LED "LED2" light is on , meaning that 3.3V is operating and flowing into DIMM slots, please do not add or remove memory modules .

2-3 ACCELERATED GRAPHICS PORT(AGP) PRO INSTALLATION

- The AGP Pro connector is an extension of the existing AGP connector and it accepts existing AGP cards.

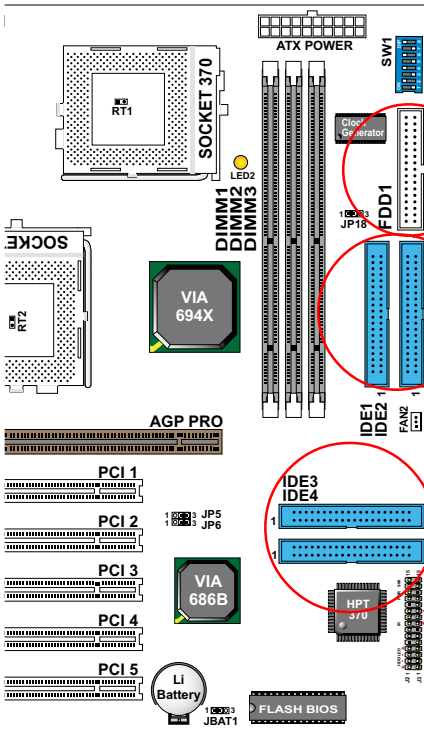


CAUTION!!

The AGP Pro slot is shipped with a warning label over the 20-pin bay. Do not remove this label and the safety tab underneath it if you will be using an AGP card without a retention notch. Removing may cause the card to shift and may cause damage to your card, slot, and motherboard. Remove ONLY when you will be using an AGP Pro card.

2-4 HDD / FDD INSTALLATION

- To install HDD (Hard Disk Drive), you may connect the cable's blue connector to the motherboard's primary (IDE1) or secondary IDE 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.
- 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 markings on the floppy ribbon cable to Pin1.

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

2-5 CPU BUS RATIO SELECT

- Normally, the Bus Ratio (Frequency Multiple) of your processor is locked by processor's Vendor, setting of the CPU Bus Ratio will have no effect.
- Bus Ratio exceed 8.0X, user can not change all values from DIP switch, bus ratio will be detected by BIOS automatically.

SW1 DIP1 ~ DIP4 SETTING																	
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2-5.1 BUS CLOCK SELECT

SW1 DIP5 ~ DIP8 SETTING																	
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<table border="1"> <tr> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	ON	ON	ON	ON	ON	OFF	OFF	OFF	1	2	3	4	5	6	7	8	100MHz
ON	ON	ON	ON	ON	OFF	OFF	OFF										
1	2	3	4	5	6	7	8										
<table border="1"> <tr> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	ON	ON	ON	ON	ON	OFF	OFF	OFF	1	2	3	4	5	6	7	8	133MHz
ON	ON	ON	ON	ON	OFF	OFF	OFF										
1	2	3	4	5	6	7	8										

- Over clocking is not recommended, your system may work unstable.




2-6 JUMPER DEFINITION

- The figure below shows the location of the motherboard's jumper blocks.

CAUTION

- *Do not move the jumper with the power on. Always turn off the power and unplug the power cord from the computer before changing the jumper. Otherwise, the motherboard could be damaged.*

2-6.1 ONBOARD FAN CONNECTOR (FAN1/FAN2/FAN3)

FAN1/FAN2/FAN3 : ONBOARD FAN CONNECTOR (12V)	
CPU FAN1	FAN1 
CPU FAN2	FAN2 
SYSTEM FAN	FAN3 

Those connectors support processor/system/chassis cooling fan with +12V. Those support three pin head connector. When connecting the wire to FAN connectors, user should give attention that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your motherboard 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 fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed.



NOTE 1: Always consult vendor for proper CPU cooling fan.

NOTE 2: CPU FAN supports the FAN control. You can install PC Alert utility. This will automatically control the CPU FAN speed according to the actual CPU temperature.





2-6.2 VIO SELECT (JP5/JP6)

JP5/JP6: VIO SELECT	
3.3V (default)	JP5  JP6 
3.4V	JP5  JP6 
3.5V	JP5  JP6 
3.6V	JP5  JP6 



This function allows you to select the voltage supplied to the DRAM. The default voltage (3.3V) should be used unless processor overclocking requires a higher voltage.

NOTE: Using a higher voltage may help when overclocking but may result in the shortening of your computer components's life. It is strongly recommended that you leave this setting on its default.

2-6.3 USB PORT SELECT-1 (JP8/JP9)



JP8/JP9: USB PORT SELECT (1)	
Redirect USB port 2 to USB2 connector (default)	JP8  JP9 
Redirect USB2 to AGP slot	JP8  JP9 

2-6.4 POWER LOST RESUME (JP18)

JP18: POWER LOST RESUME	
Disabled (default)	JP18 
Enabled	JP18 

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


2-6.5 CLEAR CMOS DATA (JBAT1)

JBAT1: CLEAR CMOS DATA	
CLEAR CMOS DATA	JBAT1 
Retain Data (default)	JBAT1 

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

NOTE : You can clear CMOS by shorting 2-3 pin when the system is POWER OFF. Then, return to 1-2 pin position (default). It may damage the motherboard if clearing the CMOS in POWER ON status. Unplug the power cord from power supply before clearing CMOS will be a best bet for user.

2-6.6 WAKE ON LAN FUNCTION (JWOL1)

JWOL1 : WAKE ON LAN (WOL) FUNCTION	
Connect the Wake On LAN signal from LAN card to JWOL1	JWOL1 



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

This feature requires that Wake On LAN feature is enabled at the BIOS “*Power Management Setup*” and that your system has an ATX power supply with at least **720mA / +5V** standby power.

2-6.7 CD-ROM AUDIO CONNECTOR (CD-IN1/CD-IN2)

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

USB1: 2nd USB Port

GAME/MIDI PORT

MIC port: Microphone Jack

Line In port: Audio In Jack

Line Out / Speaker Out port: Audio Out Jack

RT1 / RT2: CPU1 and CPU2 Thermal sensor

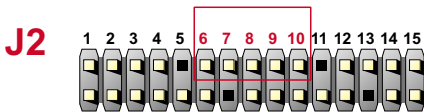
2-7 CONNECTORS

- In this section we list all external connectors that user will use them.

2-7.1 J2J3



HDD LED CONNECTOR	
PIN 1	+5V
PIN 2	HDD LED SIGNAL
PIN 3	HDD LED SIGNAL
PIN 4	+5V
DESCRIPTION	This connector supplies power to the cabinet's IDE activity LED. Read and write activity by devices connected to the Primary or Secondary IDE connector will cause the LED to light up.



INFRARED CONNECTOR	
PIN 6	INFRARED TRANSMIT SIGNAL
PIN 7	GND
PIN 8	INFRARED RECEIVE SIGNAL
PIN 9	NONE
PIN 10	+5V
DESCRIPTION	This connector supports an optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. User must also configure the setting through BIOS program "Peripheral Setup" to select whether UART2 is directed for use with COM2 or IrDA. Use the five pins and connect a ribbon cable from the module to the motherboard's IR connector according to the pin definitions.

J2

ATX POWER SWITCH	
PIN 12	ATX POWER SWITCH
PIN 13	GND
DESCRIPTION	<p>The system power is controlled by a momentary switch connected to this lead.</p> <p>Pressing the button once will switch the system between ON and SOFT OFF.</p> <p>Pushing the switch while in the ON mode for more 4 seconds will turn the system off.</p> <p>The system power LED shows the status of the system's power.</p>

J2

SMI CONNECTOR	
PIN 14	SMI(System Managment Interrupt) SIGNAL
PIN 15	GND
DESCRIPTION	<p>This allows user to manually place the system into a suspend mode or "Green" mode, where system activity is decreased to save electricity and prolong the life of certain components when the system is not in use. This 2-pin connector connects to the case-mounted suspend switch. If you do not have a switch for the connector, you may use the "Turbo Switch".</p> <p>SMI is activated when it detects a short to open moment and therefore leaving it shorted will not cause any problems. This may require one or two presses depending on the position of the switch.</p> <p>Wake-Up can be controlled by settings in the BIOS but the keyboard will always allow wake-up(the SMI lead cannot wake up the system).</p>

J3



SPEAKER CONNECTOR	
PIN 1	SPEAKER SIGNAL
PIN 2	NONE
PIN 3	GND
PIN 4	+5V
DESCRIPTION	This SPEAKER connector connects to the case-mounted speaker. Two sources (LINE OUT and SPEAKER) allow you to hear system beeps and warnings. Only SPEAKER allows you to hear system beeps before the integrated audio has been properly initialized.

J3



RESET SWITCH CONNECTOR	
PIN 5	RESET SIGNAL
PIN 6	GND
DESCRIPTION	RESET SWITCH connector connects to the case-mounted reset switch for rebooting your system without having to turn off your power switch. This is a preferred method of reboot to prolong the life of the system's power supply.

J3

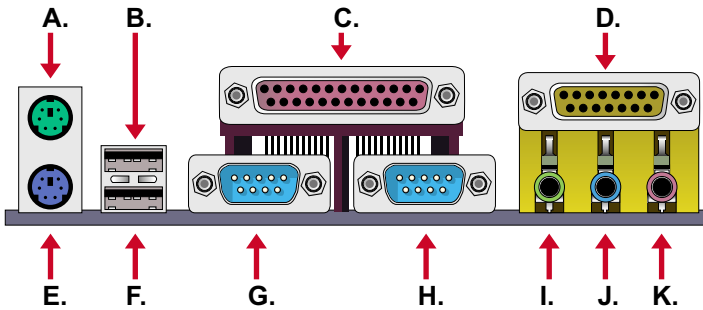


POWER LED CONNECTOR	
PIN 8	+5V
PIN 9	NONE
PIN 10	GND
DESCRIPTION	This Power LED connector connects the system power LED, which lights when the system is powered on and blinks when it is in sleep mode.

J3

SUSPEND LED	
PIN 14	SUSPEND LED SIGNAL
PIN 15	GND
DESCRIPTION	Connect to Suspend indicator light.

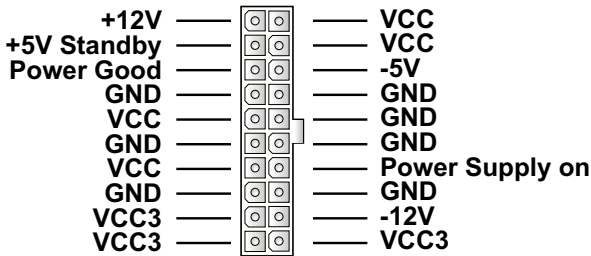
2-7.2 CHASSIS PANEL CONNECTOR



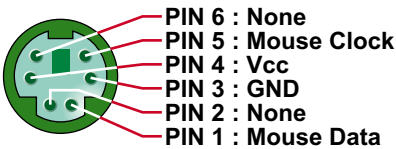
- A : PS/2 MOUSE PORT
- B : USB 0 PORT
- C : LPT1 PORT
- D : GAME/MIDI PORT
- E : PS/2 KEYBOARD PORT
- F : USB 1 PORT
- G : COM1 PORT
- H : COM2 PORT
- I : LINE / SPEAKER OUT
- J : LINE IN
- K : MICROPHONE

2-7.3 ATX POWER SUPPLY CONNECTOR

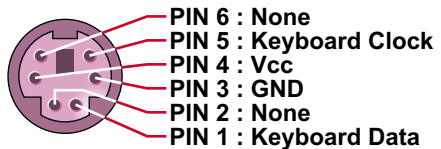
- This connector connects to an ATX power supply. The plug from the power supply only inserts in an orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that all pins are aligned.
- Reminding that your power supply should support at least 10mA on the 5V standby voltage. It may cause an difficulty to power on the system if the power supply cant support the load.
- **For Wake On LAN function, the power supply should support at least 720mA current.**



2-7.4 PS/2 MOUSE AND PS/2 KEYBOARD



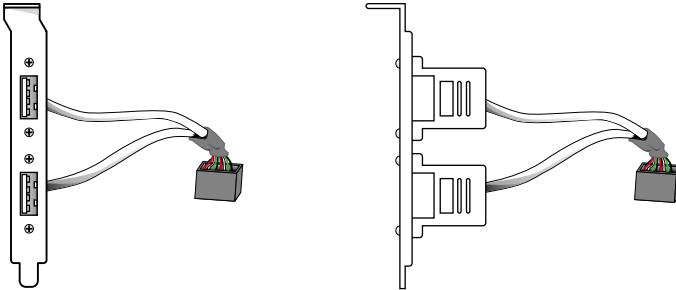
PS/2 MOUSE



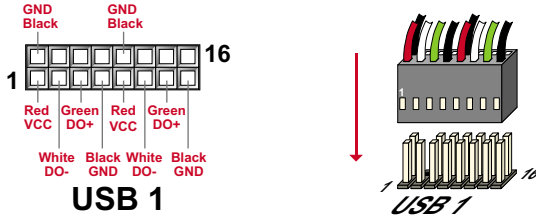
PS/2 KEYBOARD

2-7.5 SECOND USB CONNECTOR

- This motherboard provides 4 sets of USB connector. Besides 2 sets of them can be connected directly by USB devices, the other are built onboard for user to extend the USB function.



2nd USB Connector (Optional)



- When plugs the USB connector to USB1 Port, user can see every color of wires to determine which is first pin.

2-7.6 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 that you configured 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 no two devices use the same IRQ or your computer will experience problems when those two devices are in use at the same time.

CHAPTER 3

SOFTWARE SETUP

3-1 ABOUT SOLTEK SUPPORT CD

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

3-2 VIA CHIPSET DRIVER INSTALLATION (4-IN-1 DRIVER)

Step 1:

- Please put the Support CD attached to motherboard into the CD-ROM drive.
- When appears a welcome window as left screen, then user should choose "**Install Driver**".

Step 2:

- Click on the "**VIA Chipsets Driver**".

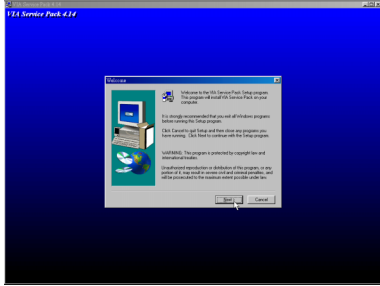
Step 3:

- Click on the "**4-in-1 driver**".

Step 4:

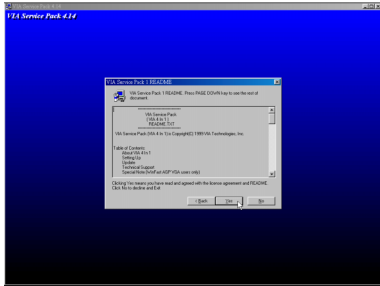
- Click on the "**Install VIA 4-in-1 driver**" to continue.

68C/68C+



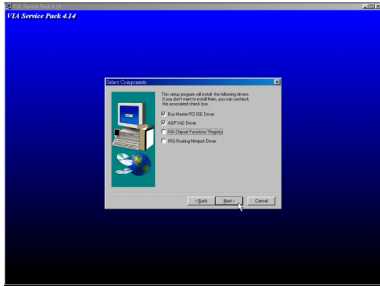
Step 5:

- Press Next button to continue.



Step 6:

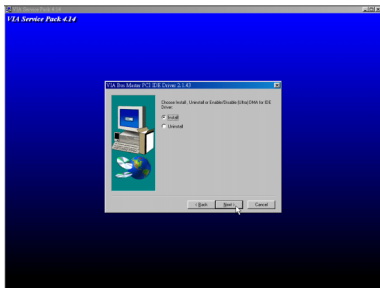
- Click “Yes” to continue.



Step 7:

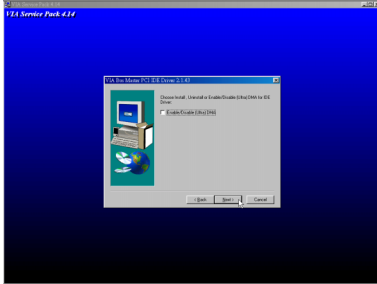
- Press select the checkbox as below:
 - Bus Master PCI IDE Driver
 - AGP VxD Driver
 - VIA Chipset Function's Registry
 - IRQ Routing Miniport Driver

Note: For user who are upgrading VIA Drivers. We recommend installing the 4-in-1 as it will automatically detect and update the necessary drivers.



Step 8:

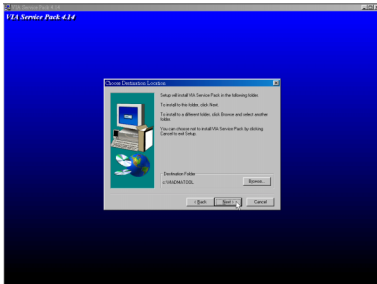
- Click “Install” and Press Next button to continue.



Step 9:

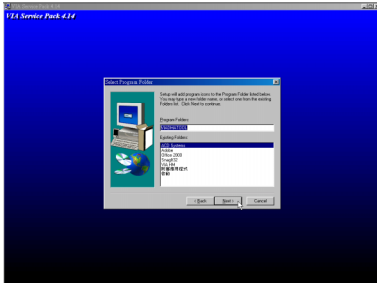
- We recommend user to leave “**Enable / Disable [Ultra] DMA**” checkbox empty.

Note: Whether select this item or not, user needs to enable the Hard Disk DMA function in Control Panel manually. (For further details, please refer to next page)



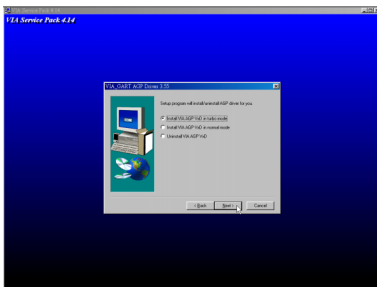
Step 10:

- The default setup destination is C:\VIADMATOOL, press Next button to continue.



Step 11:

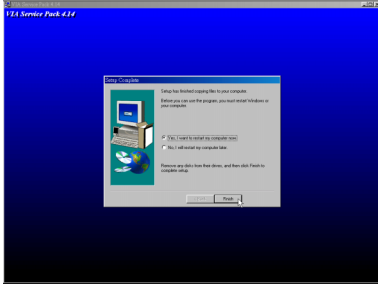
- Press Next button to continue.



Step 12:

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

68C/68C+



Step 13:

- After all the setup process is finished, please restart your computer by clicking on Finish.

About Hard Disk DMA Function

Last but not least, user must enable the Hard Disk DMA function. The process is below:

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

3-3 AC'97 AUDIO CODEC INSTALLATION

Step 1:

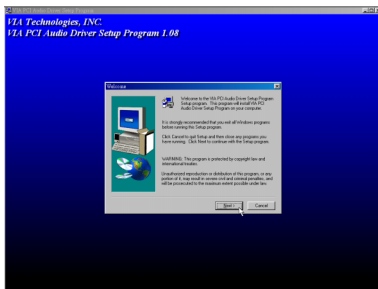
- Please put the Support CD attached to motherboard into the CD-ROM drive.
- When appears a welcome window as left screen, then user should choose “**Install Driver**”.

Step 2:

- Click on the “**VIA Chipsets Driver**”.

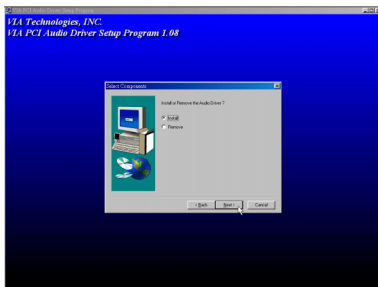
Step 3:

- Click on the “**AC'97 driver**”.



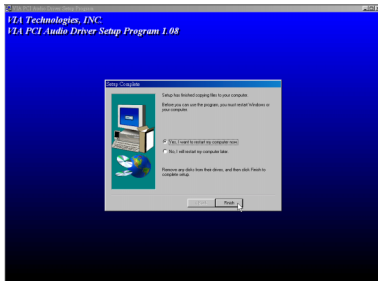
Step 4:

- Press Next button to continue.



Step 5:

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



Step 6:

- It's recommended for user to restart the computer after the audio driver is finished. Please select “**Yes, I want to restart my computer now**”.

3-4 HARDWARE MONITOR INSTALLATION

Step 1:

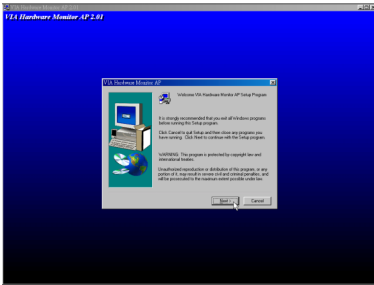
- Please put the Support CD attached to motherboard into the CD-ROM drive.
- When appears a welcome window as left screen, then user should choose “**Install Driver**”.

Step 2:

- Click on the “**VIA Chipsets Driver**”.

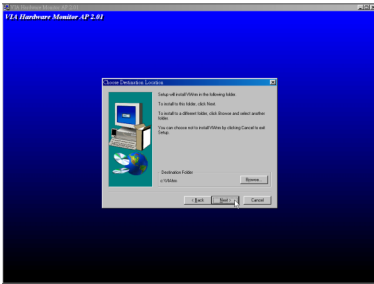
Step 3:

- Click on the “**Hardware Monitor Utility**”.



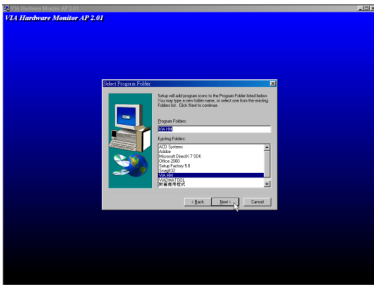
Step 4:

- Press **Next** button to continue.



Step 5:

- The default destination is **C:\VIAhm**, then press **Next** button to continue.



Step 6:

- Press **Next** button to finish the Hardware Monitor setup process.

3-5 HPT370 BIOS: RAID/SETUP FUNCTIONS (FOR 68C+ ONLY)

- To enter the HPT370 BIOS setup and RAID utility, press Control + H when the HPT370 BIOS text is first displayed during the boot process.
- The setup menu also allows users to change mode settings for hard drives attached to the HPT370 and select which drive will function as the boot unit.

IDE Device Mode settings:

UDMA4+, 5: ATA-100 devices
 UDMA4, UDMA3: ATA66 drive settings (UDMA4 is optimal)
 UDMA0-2: ATA33 device settings
 PIO1-4: Pre or Non-ATA33 IDE device settings
 MW-DMA: Older hard drives and CD-ROM devices (usually auto-detected)

Note: *Some IDE devices have settings that can not be altered.*

3-5.1 CREATING A RAID ARRAY WITH HARD DISKS ATTACHED TO THE HPT370

STRIPE ARRAY - Recommended for High-Performance (2-4 disks required)

1. Select the "Create RAID" selection from the main menu
2. Select "Striping (RAID 0)" in the "Array Mode" pop-up menu
3. Select the disk drives to be used with the "Select Disk Drives" selection
4. Select the appropriate block size in the "Block Size" pop-up menu
5. Select the "Start Creation Process" selection

MIRROR ARRAY - Recommended for Data Redundancy (2 disks required)

1. Select the "Create RAID" selection from the main menu
2. Select "Mirror (RAID 1)" in the "Array Mode" pop-up menu
3. Select the disk drives to be used with the "Select Disk Drives" selection
4. Select the "Start Creation Process" selection

Note: *The source disk must be equal or larger than the target disk.*

STRIPING + MIRROR ARRAY (RAID 0 + 1) - Recommended for High-Performance with Data Redundancy (3-4 disks required)

1. Select the "Create RAID" selection from the main menu
2. Select "Striping + Mirror(RAID 0+1)" in the "Array Mode" pop-up menu
3. Select the disk drives and/or RAID 1 arrays to be used with the "Select Disk Drives" selection
4. Select the "Start Creation Process" selection

Note: The source disk/array must be equal or larger than the target disk/array.

SPANNING (JBOD) (2-4 disks required) - Recommended for Full Data Storage Capacity

1. Select the "Create RAID" selection from the main menu
2. Select "Spanning(JBOD)" in the "Array Mode" pop-up menu
3. Select the disk drives to be used with the "Select Disk Drives" selection
4. Select the "Start Creation Process" selection

DELETING A RAID ARRAY FROM THE HPT370

1. Select the "Delete RAID" selection from the main menu
2. Select the RAID Array from the "Channel Status" menu
3. Confirm the deletion of the RAID Array.

3-5.2 CREATING A DUPLICATED DISK (REQUIRE FOR PREPARATION OF MIRROR ARRAYS WITH DISKS CONTAINING DATA)

1. Select the "Duplicate Mirror Disk" selection from the main menu
2. Select the Source Disk to be copied
3. Select the Target Disk to be duplicated
4. Select the "Start Duplication Process" selection

Note: The source disk must be equal or larger than the target disk.

3-6 HPT370 HOST ADAPTER DRIVER INSTALLATION (FOR 68C+ ONLY)

3-6.1 HPT370 HOST ADAPTER DRIVER INSTALLATION FOR WIN9X

Usually, when you boot up the Windows 95/98 system, the system will detect the HPT370 Ultra DMA host Adapter automatically, and ask you to install the driver for HPT370.

Follow the instructions as promoted by the system to install the driver.

If Windows 95/98 does not automatically detect the HPT370 controller, follow the instructions outlined below:

Using the Windows Add New Hardware function:

1. Close any running applications.
2. Open "**My Computer**".
3. Double click on the "**Control Panel**" icon.
4. Double click on the "**Add New Hardware**" icon.
5. Click on the "**Next**" button.
6. A window will ask: "Do **you want Windows to search for new hardware?**", select "**No**" then click on the "**Next**" button.
7. Various device types will be listed. Select SCSI controllers and press Next.
8. Insert the driver installation diskette into driver A, then click on the "**Have Disk...**" button.
9. Click on the "**OK**" button.
10. Click on the "**Next**" button.
11. If you see a window that displays the settings (resources) to be used by the driver, click on "**Next**" again. Windows will then install the driver.
12. Click on the "**Finish**" button.
13. The system will ask you to restart the system.

3-6.2 HPT370 HOST ADAPTER DRIVER INSTALLATION FOR A PRE-INSTALLED WINDOWS NT 4.0

When Windows NT is up and running, install HPT370 device driver as follow:

1. Open My Computer
2. Open Control Panel
3. Double click icon SCSI Adapters
4. Click Drivers
5. Click Add...
6. Click Have Disk...
7. Insert the floppy diskette containing HPT370 Windows NT4.0 device driver into driver A, and type in "A:\NT [Enter]", then click OK
8. Select HPT370 Ultra DMA Controller, you will be asked to enter the full path to the HPT370 Ultra DMA Controller files, type in "A:\NT" and then click Continue
9. When asked to restart your computer, click Yes

Your hard disk drive attached to the HPT370 host adapter must be partitioned and formatted before you access it. Please see Partitioning Your Hard Disk to know how to partition and format a hard disk drive.

PARTITIONING YOUR HARD DISK

If the hard disk drive attached to the HPT370 has not been partitioned and formatted yet, you need to partition it first. To partition the hard disk drive attached to the HPT370, follow the following steps:

1. Click the Start up button
2. Go to Administrative Tools (Common)
3. Run Disk Administrator
4. Select disk number you would like to partition
5. Select the menu Partition
6. Decide the partition size create partition of the size
7. Exit Disk Administrator
8. Select the new created partition (logical disk drive) and format it

3-6.3 HPT370 HOST ADAPTER DEVICE DRIVER FOR WINDOWS 2000 (WITH OPERATING SYSTEM ALREADY INSTALLED)

Usually, when you boot up the Windows 2000 system, Windows will detect the HPT370 Ultra DMA host Adapter automatically, and ask you to install the driver for HPT370. Follow the instructions as promoted by the system to install the driver.

If the controller is not detected automatically, follow the procedure outlined below:

1. Windows 2000 must be installed on the system prior to installing the driver.
2. Close any running applications.
3. Open **"My Computer"**.
4. Double click on the **"Control Panel"** icon.
5. Double click on the **"System"** applet.
6. Click on the **"Hardware"** button.
7. Click on the **"Device Manager"** button.
8. There is a Window listing hardware types, select the **"SCSI and RAID Controllers"** then double click it.
9. There is a Window listing drivers types, select the **"HPT370 Ultra DMA 66 controllers"** then click the right key of mouse.
10. Double Click on the **"Properties"**.
11. Click on the **"Driver"** button.
12. Click on the **"Update Driver"** button.
13. Select **"Search for a suitable driver for my device"**, then Click on then **"Next"** button.
14. Select **"Floppy disk drivers"** and insert the HPT370 Windows2000 driver disk into A:, then click on the **"Next"** button.
15. The wizard found HPT370 Ultra DMA100 Controllers, Click on the **"Next"** button.
16. To continue, Click on the "Next" button.
17. Completing the Upgrade Device Driver Wizard. Click on the "Finish" button.
18. Restart the System.

PARTITIONING YOUR HARD DISK

If the hard disk drive attached to the HPT370 has not been partitioned and formatted yet, you need to partition it first. To partition the hard disk drive attached to the HPT370, follow the following steps:

1. Click the Start up button
2. Go to Administrative Tools (Common)
3. Run Disk Administrator
4. Select disk number you would like to partition
5. Select the menu Partition
6. Decide the partition size create partition of the size
7. Exit Disk Administrator
8. Select the new created partition (logical disk drive) and format it

3-6.4 HPT370 HOST ADAPTER DEVICE DRIVER FOR WINDOWS 2000 (DURING A FRESH WIN2K INSTALLATION)

1. During the first part of the setup procedure, Win2K will prompt you to press F6 to specify an additional device. Press F6, and let Windows continue on with setup. It will continue to scroll through various device listings for several minutes, then prompt you to press the "S" key to Add a device.
2. Press S, and insert the HPT370 driver diskette. Press Enter when prompted and allow Win2K to install the HPT370 drivers.
3. Win2K will continue and complete the installation procedure.

CHAPTER 4

BIOS SETUP

4-1 INTRODUCE THE BIOS

- BIOS stands for Basic Input Output System. It is sometimes called ROM BIOS because it is stored in a Read-Only Memory (ROM) chip on the motherboard. 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.

4-2 WHAT IS BIOS SETUP

- Setup is an interactive BIOS program that you need to run when:
 1. Changing the hardware on 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 caching)

4-3 HOW TO RUN BIOS SETUP

- One way of running SETUP is to press a special function key or key combination during POST, before the operating system is loaded during POST, the BIOS usually displays a prompt such as:

Press DEL to enter SETUP

4-4 WHAT IS CMOS

- CMOS is a special kind of memory maintained by a battery after you turn your computer off. The BIOS uses CMOS to store the settings you selected in SETUP. The CMOS also maintains the internal clock. Every time you turn on your computer, the BIOS looks in CMOS for the settings you se-

lected and configures your computer accordingly. If the battery charge runs too low, the CMOS content will be lost and POST will issue a “CMOS invalid” or “CMOS checksum invalid” message. If this happens, you may have to replace the battery. After the battery is replaced, the proper settings will need to be stored in SETUP.

4-5 WHAT IS POST

- POST is an acronym for Power On Self Test. It's a traditional name for the routines that the BIOS uses to test and initializes the devices on your system when the PC is powered on. Its meanings has grown to include anything the BIOS does before the operating system is started. Each of POST routines is assigned a POST code, an unique number which is sent to I/O port 080h before the routine is executed.

4-6 BIOS UPGRADE

- Motherboards incorporate the system BIOS in a Flash memory component. Flash BIOS allows user upgrades without the need to replace an EPROM component.
- The upgrade utility fits on a floppy diskette and 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, but no memory managers can be installed during upgrades.

4-6.1 BEFORE UPGRADE BIOS

- It is recommended that you save a copy of the original motherboard BIOS along with a Flash EPROM Programming utility(AWDFLASH.EXE) to a bootable floppy disk in case you need to reinstall the BIOS later.

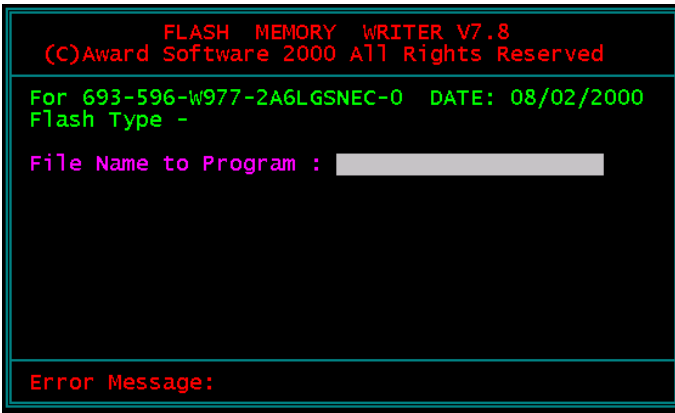
4-6.2 UPGRADE PROCESS

Note: Normally, to upgrade BIOS that is unnecessary if the system is working fine without any problem, user should upgrade the BIOS unless you experienced incompatible problem or need BIOS upgrade to create new features. However, please read all information in this section before upgrading.

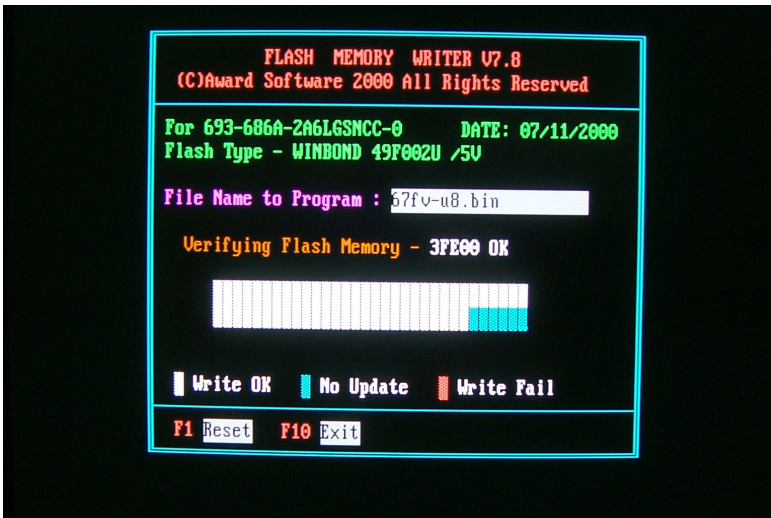
“AWDFLASH.EXE” is a Flash EPROM Programming utility that up dates the BIOS by uploading a new BIOS file to the programmable flash ROM on the motherboard, This program only works in *pure DOS environment, the utility can not be worked in win95/98, ME, NT or WINDOWS 2000 environment.*

Upgrading the system BIOS

- Set 1. Please visit the board maker’s website, download the newest BIOS file and newest award flash utility “AWDFLASH.ESE” for the motherboard. The BIOS file you downloaded will be a *. bin format.
- 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. When booting is finished type **awdf flash *.bin/sn/py/cc** and then press <Enter> to run BIOS upgrade program. (*.bin depends on your motherboard model and version code).
- Step 5. After upgraded, please press <F1> or <F10> to exit or reset your system, **Warning !** If there appears **Write Fail** while Award “FLASH MEMORY WRITER” verifying Flash memory, just repeat the process, please DO NOT reset or turn off the system. If the award memory flash utility was not able to update the BIOS successfully, your system may not be able to boot up,
- Step 6. You will see a message “CMOS checksum error-Default loaded” during booting the system. Please press to run CMOS setup utility, then reload “LOAD SETUP DEFAULTS” or “**Load Optimized Defaults**” 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 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 away unless you realize their function.

4-7 CMOS SETUP UTILITY

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 - 2000 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	(Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

3. Using the arrows on your keyboard, 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.

4-8 STANDARD CMOS SETUP

- Standard CMOS Setup allows you to record some basic system hardware configuration and set the system clock and error handling. You only need to modify the configuration values of this option when you change your system hardware configuration or the configuration stored in the CMOS memory gets lost or damaged.

Run the STANDARD CMOS SETUP as following:

- Choose "STANDARD CMOS SETUP" from the Main Menu and a screen with a list of option will appear:

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software Standard CMOS Features

Date (mm:dd:yy)	Fri, August 11 2000	Item Help
Time (hh:mm:ss)	9 : 52 : 15	Menu Level ▶
▶ IDE Primary Master	Press Enter 13022 MB	
▶ IDE Primary Slave	Press Enter None	
▶ IDE Secondary Master	Press Enter None	
▶ IDE Secondary Slave	Press Enter None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All,But Keyboard	
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

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

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Date (mm:dd:yy) Set the current date and time.
Time (hh:mm:ss)

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

Drive A / Drive B Set this field to the type(s) of floppy disk drive(s) in-
stalled 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 Set this field to the type of video display card installed
in the system. The choices are:
Monochrome,
Color 40x25,
VGA / EGA,
Color 80x25.

Halt On Set this warning feature for the type of errors that will
cause the system to halt. The choices are:
No Errors,
All, But Keyboard,
All, But Diskette,
All, But Disk / Key.

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

4-9 ADVANCED BIOS FEATURES

- ADVANCED BIOS FEATURES allows you to improve your system performance or set up system features according to your preference.

Run the ADVANCED BIOS FEATURES as following:

1. Choose "ADVANCED BIOS FEATURES" from the Main Menu and a screen with 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.

<Shift> + <F2>: Change color.

<F5>: Get the previous values. These values are the values with which the user started in 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) 1984-2000 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	
Process or Number Feature	Enabled	
Quick Power On Self Test	Disabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	LS120	
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	
MPS Version Control For OS	1.1	
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 Enabled: Activates automatically when the system boots up causing a warning message to appear if there is anything attempting to access the boot sector or hard disk partition table.

Disabled: No warning message will appear when there is something attempting to access the boot sector or hard disk partition table.

NOTE: *Many diagnostic (or boot manager) programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you disable the virus protection first.*

CPU Internal Cache Choose Enabled or Disabled. This option allows you to enable or disable the CPU's internal cache.

External Cache Choose Enabled or Disabled. This option allows you to enable or disable the external cache.

CPU L2 Cache ECC Checking This item allows you to enable/disable CPU L2 Cache ECC checking.
The choice: Enabled, Disabled.

Quick Power On Self Test Choose Enabled or Disabled. This option allows you to speed up the Power-On Self-Test routine.

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 choice: Floppy, LS/ZIP, HDD, SCSI, CDROM, Disabled.

Swap Floppy Drive Choose Enabled or Disabled. This option swaps floppy drive assignments when it is enabled.

Boot Up Floppy Seek Enabled : During POST, BIOS checks the track number of the floppy disk drive to see whether it is 40 or 80 tracks.
Disabled: During POST, BIOS will not check the track number of the floppy disk drive.

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Boot Up NumLock Status Choose ON or OFF. This option lets user activates the NumLock function at boot-up.

Gate A20 Option Choose Normal or Fast. This option allows the RAM to access the memory above 1MB by using the fast gate A20 line.

Typematic Rate Setting Choose Enabled or Disabled. Enable this option to adjust the keystroke repeat rate.

Typematic Rate (Chars / Sec) Range between 6 and 30 characters per second. This option controls the speed of repeating keystrokes.

Typematic Delay (Msec) Choose 250, 500, 750 and 1000. This option sets the time interval for displaying the first and the second characters.

Security Option Choose System or Setup. This option prevents unauthorized system boot-up or use of BIOS setup.

OS Select For DRAM > 64MB Non-OS/2 : For Non-OS/2 system.
OS: For OS/2 operating system.

Video BIOS Shadow Enabled copies Video BIOS to shadow RAM for improving performance.
The choice: Enabled, Disabled.

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.

4-10 ADVANCED CHIPSET FEATURES

- ADVANCED CHIPSET FEATURES allows you to change the values of chipset registers. These registers control the system options.

Run the ADVANCED CHIPSET FEATURES as following:

1. Choose "ADVANCED CHIPSET FEATURES" from the Main Menu and a screen with 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.

<Shift> + <F2>: Change color.

<F5>: Get the previous values. These values are the values with which the user started in 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) 1984-2000 Award Software
Advanced Chipset Features**

		Item Help
DRAM Timing By SPD	Enabled	Menu Level ▶
Bank 0/1 DRAM Timing	SDRAM 8/10ns	
Bank 2/3 DRAM Timing	SDRAM 8/10ns	
Bank 4/5 DRAM Timing	SDRAM 8/10ns	
× DRAM Clock	Host CLK	
× SDRAM Cycle Length	3	
× Bank Interleave	Disabled	
DRAM Drive Strength	Auto	
× DRAM Drive Value	2F	
Memory Hole	Disabled	
P2C/C2P Concurrency	Enabled	
System BIOS Cacheable	Disabled	
Video RAM Cacheable	Disabled	
AGP Aperture Size	64M	
AGP-4X Mode	Enabled	
AGP Driving Control	Auto	
× AGP Driving Value	DA	
AGP Fast Write	Disabled	
OnChip USB	Enabled	
USB Keyboard Support	Disabled	
OnChip Sound	Auto	
OnChip Modem	Disabled	
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	Enabled	
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

DRAM Timing by SPD This item allows you to select DRAM Timing by SPD or not.

SPD (Serial Presence Detect) you can find it located on your memory modules, BIOS reads information coded in SPD during system boot up resulting in an accurate memory operation.

SDRAM Cycle Length You can select CAS latency time in HCLKs of 2/2 or 3/3. The system board designer should have set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

DRAM Clock This item allows you to control the DRAM speed. The choice: Host Clock, HCLK+33M.

DRAM Drive Strength Leave this item with Auto mode. The choice: Auto, Manual.

DRAM Drive Value When "DRAM Drive Strength" is set to "Auto", this item will be unable to be selected. We don't recommend user to adjust this item.

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 choice: 15M-16M, Disabled.

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

System BIOS Cacheable Choose Enabled or Disabled. When enabled, the access to the system BIOS ROM addressed at F0000H - FFFFFH is cached.

Video RAM Cacheable Choose Enabled or Disabled. When enabled, the access to the VGA RAM addressed is cached.

AGP Aperture Size Choose 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.

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.

OnChip USB 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 choice: Enabled, Disabled.

USB Keyboard Support Enabled: Enable function when the USB keyboard is being used.
Disabled : When the AT keyboard is being used, choose disabled.

OnChip Sound Enabled : Turn on AC'97 codec chip controller.
Disabled : Turn off AC'97 codec chip controller or user can plug external add-on sound card.

OnChip Modem Enabled: Turn on MC99 feature.

IDE HDD Block Mode Choose Enabled or Disabled. If your hard disk size is larger than 540MB, then choose Enabled. If you are using the IDE HDD AUTO DETECTION option, the BIOS will choose this option automatically.

NOTE: *Some older model HDDs do not provide this feature.*

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 choice: 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 choice: Enabled, Disabled.

PCI / VGA Palette Snoop Choose Enabled or Disabled. It determines whether or not the MPEG ISA cards can work with PCI / VGA.

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

PCI Delay Transaction The choice: Enabled, Disabled.

PCI #2 Access #1 Retry The choice: Enabled, Disabled.

AGP Master 1 ws write The choice: Enabled, Disabled.

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AGP Master 1 ws read The choice: Enabled, Disabled.

Memory Parity/ECC Check This item enabled to detect the memory parity and Error Checking & Correcting.
The choice: Enabled, Disabled.

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

4-11 INTEGRATED PERIPHERALS

- INTEGRATED PERIPHERALS option allows you to get some informations inside your system when it is working.

Run the INTEGRATED PERIPHERALS as following:

1. Choose "INTEGRATED PERIPHERALS" from the Main Menu and a screen with a list of option will appear:

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software Integrated Peripherals

		Item Help
On-Chip IDE Channel 0	Enabled	
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	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
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)	Enable	

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

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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.

<Shift> + <F2>: Change color.

<F5>: Get the previous values. These values are the values with which the user started in the current session.

<F6>: Load all options with the BIOS default values.

<F7>: Load all options with the Setup default values.

- 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 deactivate an interface if you install a primary and/or second add-on IDE interface.
The choice: Enabled, Disabled.
- IDE Prefetch Mode** The onboard IDE drive interfaces supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interfaces, set this field to Disabled if the interface does not support prefetching.
The choice: Enabled, Disabled.
- Primary Master / Slave PIO** Choose Auto or Mode 0~4. The BIOS will detect the HDD mode type automatically when you choose Auto.
Secondary Master / Slave PIO You need to set to a lower mode than Auto when your hard disk becomes unstable.
The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.
- Primary Master / Slave UDMA** Ultra DMA/66 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA drive and your system software
Secondary Master / Slave UDMA both support Ultra DMA/66, select Auto to enable BIOS support.
The choice: Auto, Disabled.
- Init Display First** This option allows you to decide to activate PCI Slot or AGP first.
The choice: 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 choice: Enabled, Disabled.

- Onboard FDC Controller** Select Enabled if your system has a floppy drive controller (FDC) installed on 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 choice: Enabled, Disabled.
- Onboard Serial Port 1 / Port 2** Select an address and corresponding interrupt for the first and second serial ports.
The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.
- UART 2 Mode** This item allows you to select which mode for the Onboard Serial Port 2.
The choice: Standard, HPSIR, ASKIR
- IR Function Duplex** This item allows you to select the IR half / full duplex function.
The choice: Half, Full.
- TX, RX inverting enabled** 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 for avoiding any error in your system.
The choice: "No, No", "No, Yes", "Yes, No", "Yes, Yes".
- Onboard Parallel Port** This item allows you to determine onboard parallel port controller I/O address setting.
The choice: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.
- Parallel Port 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 choice: SPP, EPP, ECP, ECP + EPP.
- ECP Mode Use DMA** Select a DMA channel for the parallel port for use during ECP mode.
The choice: 3, 1.

Parallel Port EPP Type Select EPP port type 1.7 or 1.9
The choice: EPP1.7, 1.9.

Onboard Legacy Audio This field controls the onboard 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.

4-12 POWER MANAGEMENT SETUP

- POWER MANAGEMENT SETUP allows you to set the system’s power saving functions.

Run the POWER MANAGEMENT SETUP as following:

1. Choose “POWER MANAGEMENT SETUP” from the Main Menu and a screen with a list of option will appear:

**CMOS Setup Utility - Copyright (C) 1984-2000 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	Instant-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.

<Shift> + <F2>: Change color.

<F5>: Get the previous values. These values are the values with which the user started in the current session.

<F6>: Load all options with the BIOS default values.

<F7>: Load all options with the Setup default values.

ACPI Function Enabled: Turn on ACPI function.
Disabled: Turn off ACPI function.

- Press <Enter> on the Power Management item, then there is a list of it appears for you to choose further setting.

**CMOS Setup Utility - Copyright (C) 1984-2000 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 category allows you to select the type (or degree) of power saving and is directly related to the following modes:

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

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

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

ACPI Suspend Type This item will allow you to select the ACPI suspend type. You can select S3(STR) for suspending to DRAM or S1(POS) for power on suspend under Windows 98 ACPI mode.
The choice: S1(POS), S3(STR).

PM Control by APM When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock, If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings. If the Max. Saving is not enabled, this will be present to 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.
Susp, Stby --> 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	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 in which the MODEM can use.
The choice: 3, 4, 5, 7, 9, 10, 11, NA.

- Soft-Off by PWRBTN** Instant-Off: Turn off the system power at once after pushing the power button.
 Delay 4 Sec: Turn off the system power 4 seconds after pushing the power button. (to meet PC97/98 spec)

- Press <Enter> on the Wake Up Events item, then there is a list of it appears for you to choose further setting.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Wake Up Events

VGA	OFF	Item Help
LPT & COM	LPT/COM	Menu Level ▶
HDD & FDD	ON	
PCI Master	OFF	
Wake Up On LAN/Ring	Disabled	
Modem Ring Resume	Disabled	
RTC Alarm Resume	Disabled	
× Date (of Month)	0	
× Resume Time (hh:mm:ss)	0 0 0	
Primary INTR	ON	
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 On of LPT & COM, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

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

PCI Master When On of PCI Master, 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 choice: Enabled, Disabled.
- RTC Alarm Resume** When Enabled, you can set the data and time at the which the RTC (Real Time Clock) alarm awakens the system from suspend mode.
The choice: 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.
- Modem Ring Resume** 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 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.

**CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
IRQ Activity Monitoring**

		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)	Enabled	
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

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

4-13 PNP / PCI CONFIGURATION

- PNP/PCI CONFIGURATION allows you to set the system’s power saving functions.

Run the PNP/PCI CONFIGURATION as following:

1. Choose “PNP/PCI CONFIGURATION” from the Main Menu and a screen with a list of option will appear:

**CMOS Setup Utility - Copyright (C) 1984-2000 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	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	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.

<Shift> + <F2>: Change color.

<F5>: Get the previous values. These values are the values with which the user started in the current session.

<F6>: Load all options with the BIOS default values.

<F7>: Load all options with the Setup default values.

PNP OS Installed Yes: OS supports Plug and Play function.
No : OS doesn't support Plug and Play function.

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

Reset Configuration Choose Enabled or Disabled. Disabled **retains** PNP configuration data in BIOS and Enabled **resets** the PNP configuration data in BIOS.

Resource Controlled Choose Manual or Auto. The BIOS checks the IRQ / DMA channel number on the ISA and PCI card manually if you choose Manual and the IRQ / DMA channel number will be checked automatically if you choose Auto.

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

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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

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

**CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
DMA Resources**

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

↑ ↓ → ←: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 Leave this field at Disabled.
The choice: Enabled, Disabled.

Assign IRQ for VGA Enabled : Add one IRQ to VGA controller.
Disabled: Remove IRQ from USB controller. The system will have extra IRQ for other devices but the VGA controller will still not be disabled. (only IRQ was removed)

Assign IRQ for USB Enabled : Add one IRQ to USB controller.
Disabled: Remove IRQ from USB controller. The system will have extra IRQ for other devices but the USB controller will still not be disabled. (only IRQ was removed)

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

4-14 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 with your motherboard supplier to get proper value about your setting of the CPU temperature.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software PC Health Status

Current CPU Temp.	36°C/96°F	Item Help
Current System Temp.	°C/32°F	Menu Level ▶
Current CPUFAN1 Speed	5120 RPM	
Current CPUFAN2 Speed	0 RPM	
Vcore	1.53V	
2.5V	3.25V	
3.3V	3.28V	
5V	5.00V	
12V	11.76V	

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

Current CPU Temp. Shows current CPU temperature.

Current System Temp. Shows current system temperature.

Current CPUFAN1 Speed Shows current CPUFAN1 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)

Voltage Shows power supply actual voltage value.

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

4-15 FREQUENCY/VOLTAGE CONTROL

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software Frequency Control

Auto Detect DIMM/PCI Clk	Enabled	Item Help
Spread Spectrum	Disabled	Menu Level ▶
CPU Host Clock (CPU/PCI)	Default	

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

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

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

CPU Host Clock (CPU/PCI) This item allows you to select CPU/PCI frequency.
The choice: Default, 66/33MHz, 75/37MHz, 83/41MHz, 95/41MHz, 100/33MHz, 103/34MHz, 112/37MHz, 124/31MHz, 129/32MHz, 133/33MHz, 138/34MHz, 140/35MHz, 150/37MHz.

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

4-16 LOAD OPTIMIZED DEFAULTS

- When you press <Enter> on this item you 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 factory settings for optimal performance system operations.

4-17 SET SUPERVISOR / USER PASSWORD

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

1. Choose “Change Password” in the Main Menu and press <Enter>. The following message appears:

“Enter Password : ”

2. The first time you run this option, enter your password up to 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” as you just typed again to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password or entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.

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7. Move the cursor to Save & Exit Setup to save the option you did, 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.*

4-18 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 "`

Press <Enter> key to save the configuration changes.

4-19 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 "`

You may change the prompt to "Y" and press <Enter> key to leave this option .