

**TI6VG4**  
**Pentium II/III Apollo Pro 133(A)**  
**ATX Motherboard**

**User's Manual**

Version 1.1

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## Chapter 1 Introduction

This manual is designed to give you information on the TI6VG4 motherboard. It is divided into the following sections:

- **Introduction**
- **Specifications**
- **Hardware Description**
- **Configuring the Motherboard**
- **Installation**
- **BIOS Configuration**
- **VIA Drivers and DirectX Installation**

### Checklist

Please check that your package is complete and contains the items below. If you discover damaged or missing items, please contact your dealer.

- The TI6VG4 Motherboard
- 1 IDE ribbon cable
- 1 floppy ribbon cable
- 1 CD containing a system monitoring utility, Bus Master IDE driver and utilities.

### Product Information

	<b>TI6VG4</b>	<b>TI6VG4X</b>
<b>Chipset</b>	<b>82C693AA</b>	<b>82C694X</b>
<b>AGP</b>	<b>2X</b>	<b>2X/4X</b>

\* After installing Windows 95 or Windows 98(SE), install VIA 4 in 1 drivers to ensure that your system works properly.

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## Chapter 2 Specifications

The TI6VG4 is a high-performance ATX Apollo Pro 133(A) motherboard with a Slot 1 connector for Pentium® II/III processors. It offers flexibility in terms of CPU frequency and main memory type and size. The main features of the motherboard consist of the following:

### CPU Socket

Slot 1

### Processor

Intel Pentium II 233/266/300MHz (66MHz / Klamath)  
Intel Celeron 266/300/300A/333 (66MHz)  
Intel Pentium II 333MHz (66MHz / Deschutes)  
Intel Pentium II 300/350/400/450MHz (100MHz / Deschutes)  
Intel Pentium III 450/500/550MHz (100MHz / Katmai)  
Intel Pentium III 533/600/667MHz (133MHz / Katmai/Coppermine)

### L2 Cache

CPU integrated L2 cache

### Main Memory

Three 168-pin DIMM sockets with PC133 support  
Memory types: Extended Data Output (EDO) DRAM, SDRAM (Synchronous DRAM)  
Memory size: 16MB, 32MB, 64MB, 128MB, 256MB, 512MB

### Chipset

VIA Apollo Pro 133(A) (VT82C693AA/X and VT82C686A)

### Super I/O

The super I/O is a built in the VT82C686A chip and supports:

- Two 16550 UART compatible serial ports
- One parallel port (ECP/EPP compatible)
- One floppy controller (2.88MB compatible)
- One IrDA port

### PCI Bus Master IDE Controller (UDMA33/66)

Onboard PCI Bus Master IDE (UDMA33/66) controller with two connectors for up to four IDE devices in two channels, supporting faster data transfer rates, enhanced IDE devices, PIO Mode 3/4 and Bus Mastering Ultra DMA33/66 (*You have to install the Bus Master IDE driver to enable this feature.*)

**BIOS**

Award BIOS with ISA Plug and Play (PnP) extension, DMI, bootable CD-ROM and power-management features. The BIOS is Y2K (Year 2000) compliant.

**Mouse Connector**

PS/2 type

**Keyboard Connector**

PS/2 type

**USB Connector**

One external stacked USB connector with 2 ports and a pin-header connector for the optional USB connector to support another 2 ports.

**Windows 98/95-shut-off**

Allows shut-off control from within Windows 98/95

**Onboard Audio**

The AC-97 audio function is integrated in the VIA VT82C686A South Bridge chip.

**Onboard AGP Slot**

The AGP (Accelerated Graphics Port) slot supports AGP compliant VGA cards to achieve rich 3D and video graphics display. *VT82C693AA supports 2X AGP while VT82C694X supports 2X/4X AGP.*

**Expansion Slots**

- Five 32-bit PCI slots
- One 16-bit ISA slots
- One AGP slot
- One AMR slot for a modem riser card

**Form Factor**

ATX, 12" x 7.48 (30.5cm x 19cm)



## Chapter 3 Hardware Description

This chapter briefly describes each of the major features of the TI6VG4 motherboard. The layout of the board in Figure 1 shows the location of the key components. The topics covered in this chapter are as follows:

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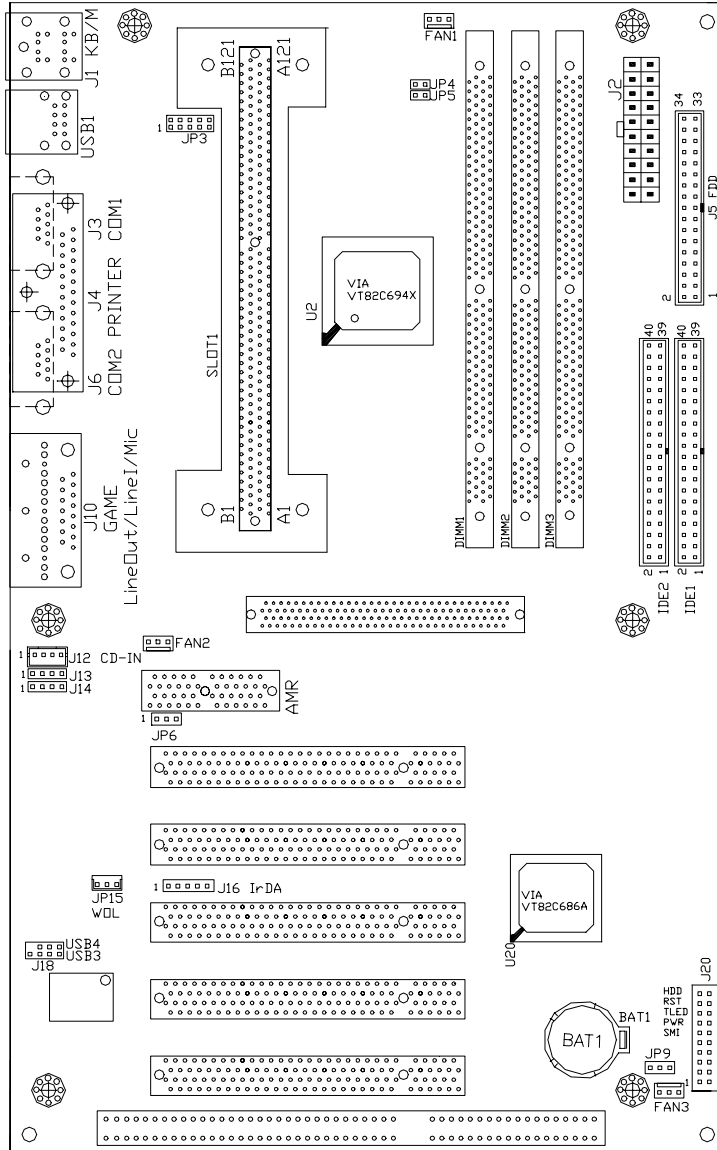


Figure 1: Layout of the TI6VG4 Motherboard

### 3.1 Processor

The TI6VG4 motherboard is designed to take an Intel Pentium II/III processor running 233/266/300/333/350/400/450/500/533/550/600/667MHz or an Intel Celeron processor running 266/300/333/366/400/433/466MHz with its Slot 1 processor connector.

### 3.2 L2 Cache

The L2 cache is integrated in the processor.

### 3.3 Main Memory

The TI6VG4 motherboard supports three 168-pin DIMM (Dual In-line Memory Module) sockets to form a memory configuration from 16MB to 1.5GB. DIMM modules can be 16MB, 32MB, 64M, 128MB, 256, and 512MB in SDRAM. In populating the DIMM sockets, any socket can be populated first. Refer to the following table on how to do the memory configuration.

(DIMM1)	(DIMM2)	(DIMM3)	Total Memory
16MB	-----	-----	16MB
32MB	-----	-----	32MB
64MB	-----	-----	64MB
128MB	-----	-----	128MB
16MB	16MB	-----	32MB
32MB	16MB	-----	48MB
64MB	16MB	-----	80MB
128MB	16MB	-----	144MB
16MB	16MB	16MB	48MB
32MB	16MB	16MB	64MB
64MB	16MB	16MB	96MB
128MB	16MB	16MB	160MB
32MB	32MB	-----	64MB
64MB	32MB	-----	96MB
128MB	32MB	-----	160MB
32MB	32MB	16MB	80MB
64MB	32MB	16MB	112MB

128MB	32MB	16MB	176MB
32MB	32MB	32MB	96MB
64MB	32MB	32MB	128MB
128MB	32MB	32MB	192MB
64MB	64MB	-----	128MB
128MB	64MB	-----	192MB
64MB	64MB	16MB	144MB
128MB	64MB	16MB	208MB
64MB	64MB	32MB	160MB
128MB	64MB	32MB	224MB
64MB	64MB	64MB	192MB
128MB	64MB	64MB	256MB
128MB	128MB	128MB	384MB
256MB			256MB
256MB	128MB	128MB	512MB
256MB	256MB		512MB
256MB	256MB	256MB	768MB
512MB			512MB
512MB	512MB		1GB
512MB	256MB	256MB	1GB
512MB	512MB	512MB	1.5GB

**Notes:**

- Memory modules specified for the motherboard are 168-pin SDRAM DIMMs and all sizes may be currently available.
- Other DIMM combinations may also result in the same totals.
- This is not an exhaustive list of possible combinations.
- With 133MHz bus speed, use SDRAM modules with PC133 or PC100 specification. When using 100MHz bus speed, use SDRAM modules with PC133/100/66 specification. When using 66MHz bus speed, use SDRAM modules with PC100 or PC66 specification.

### **3.4 BIOS**

The BIOS on the TI6VG4 motherboard provides the standard BIOS functions plus the following additional features:

#### **1. ISA Plug and Play (PnP) Extension**

Unlike PCI cards that are Plug and Play, ISA cards require setting jumpers to resolve hardware conflicts. To make a computer system PnP, an ISA PnP standard is established and supported by new operating systems, such as Windows 95. Under Windows 95, the motherboard BIOS must have an ISA PnP extension to support new ISA PnP cards.

#### **2. Power Management**

The power management feature provides power savings by slowing down the CPU clock, turning off the monitor screen and stopping the HDD spindle motor. The BIOS fully conforms to ACPI (Advanced Configuration and Power Interface) specification.

### **3.5 Onboard AGP Slot**

The AGP (Accelerated Graphics Port) slot supports AGP compliant VGA cards to achieve rich 3D and video graphics display. *VT82C693AA supports 2X AGP while VT82C694X supports 2X/4X AGP.* AGP is a platform bus specification that enables 3D graphics capabilities including support for z-buffering, alpha blending and faster texture mapping.

### **3.6 Hardware Monitoring**

Hardware monitoring is integrated in the VIA VT82C686A South Bridge chip. It monitors your PC's voltage, temperature and fan speeds to ensure a more stable computer system. This feature is compatible with the System Monitor utility.

### **3.7 Multi-I/O**

The motherboard's multi-I/O is integrated in the VIA VT82C686A South Bridge supports a keyboard controller, two serial ports, one parallel port, one floppy controller and one IrDA port. The serial ports are 16550 UART compatible. The parallel port features high-speed EPP/ECP mode. The floppy controller supports up to 2.88MB format.

### 3.8 Interrupt Request (IRQ) Lines

There is a total of 15 IRQ lines available on the motherboard. Peripheral devices use an interrupt request to notify the CPU for the service required. The following table shows the IRQ lines used by the devices on the motherboard:

<u>Level</u>	<u>Function</u>
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
	Real Time Clock
	Software Redirected to Int 0Ah
	Reserved
	Reserved
	Reserved
	Co-Processor
	Primary IDE
	Secondary IDE
IRQ3	INTERRUPT
IRQ4	Serial Port #1
IRQ5	INTERRUPT
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1

### 3.9 Onboard PCI-IDE

The PCI-IDE controller, integrated in the VIA chipset, supports PIO mode 3/4 and bus mastering Ultra DMA33/66. Using HDDs that support Ultra DMA33/66, hard drive data transfer speed is increased for better overall system performance. There are two IDE connectors - primary IDE and secondary IDE. With two devices per connector, up to four IDE devices can be supported.

### 3.10 DMA Channels

There are seven DMA channels available on the motherboard. Only DMA2 is used by the floppy controller. In the case that ECP mode on the parallel port is utilized, DMA1 or DMA3 will be used.

### 3.11 I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. There is a total of 1K port address space available. The following table lists the I/O port addresses used on the motherboard.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock,, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
2F8h - 2FFh	Serial Port #2(COM2)
378h - 3FFh	Parallel Port #1(LPT1)
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

### 3.12 Onboard Audio

The AC-97 audio is integrated in the VIA VT82C686A South Bridge chip. It features high quality PC audio with surround sound to bring new levels of realism to games and eliminates audio card non-compatibility issues.

### 3.13 AMR Slot

The AMR slot on the TI6VG4 motherboard is designed to support an AC-Link compatible modem riser card. The audio function is already a built-in feature of the motherboard.

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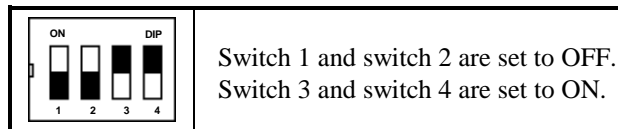
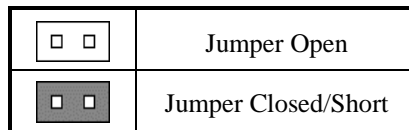


## Chapter 4 Configuring the Motherboard

The following sections describe the necessary procedures and proper jumper settings to configure the TI6VG4 motherboard. For the locations of the jumpers, refer to Figure 2.

4.1 CPU Frequency Setting .....	15
4.2 JP4, JP5: Force Clock Select.....	15
4.3 JP6: Onboard Audio and AMR Slot Setting .....	16
4.4 JP9: Clear CMOS Select .....	16

The following examples show the conventions used in this chapter.



**CAUTION:** Danger of explosion if battery is incorrectly replaced.  
Replace only with the same or equivalent type recommended by the manufacturer.

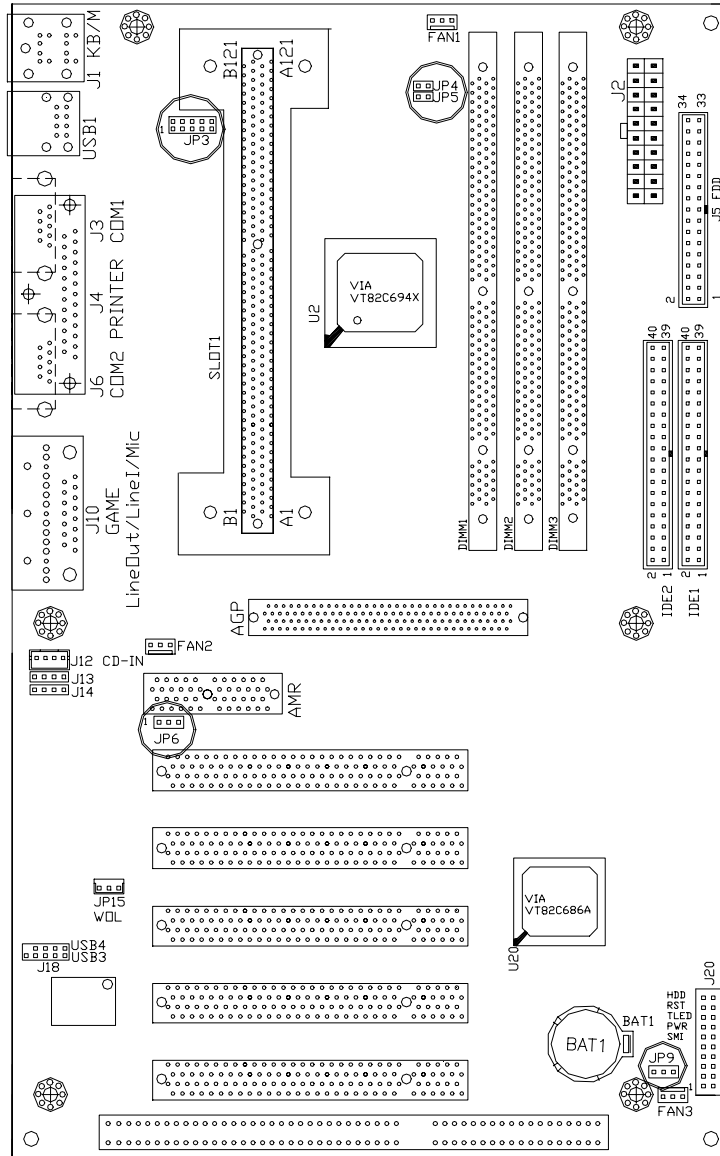


Figure 2: Jumper Location on the TI6VG4







## 4.1 CPU Frequency Setting

The TI6VG4 uses jumperfree technology in configuring the processor on the motherboard. The system automatically detects the CPU bus speed, 66MHz, 100MHz or 133MHz and sets the multiplier, or ratio, to 3X. The maximum multiplier is 8X. The BIOS (under Chipset Feature Setup) allows users to change the CPU multiplier to set the correct or desired CPU frequency.

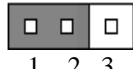

**IMPORTANT NOTE:** It is possible that the system will not boot if the CPU has been changed. When this happens, turn off the computer by pressing the power button and turn it on again by pressing the **Insert** key and the power button simultaneously. When the system is turned on, press the **Delete** key to enter BIOS Setup and configure the CPU speed.

## 4.2 JP4, JP5: Force Clock Select

Use these two jumpers to force the CPU bus speed (FSB) from 66MHz to 100MHz or from 100MHz to 133MHz. Refer to the table below on how to configure the jumper.

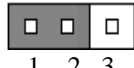

JP4	JP5	Bus Speed / FSB
 short	 short	Normal
 open	 short	Force 66MHz to 100MHz
 short	 open	Force 100MHz to 133MHz

### 4.3 JP6: Onboard Audio and AMR Slot Setting

JP6	Setting	Onboard Audio	AMR
 1 2 3	Pin 1-2 : short	Primary	Secondary
 1 2 3	Pin 2-3 : short	Secondary	Primary

### 4.4 JP9: Clear CMOS Select

Use JP9, a 3-pin header, to clear the contents of the CMOS RAM. Do not clear the CMOS RAM unless it is absolutely necessary. You will lose your password, etc.

JP9	Jumper Setting	Function
 1 2 3	pin 1-2: short	Normal
 1 2 3	pin 2-3: short	Clear CMOS

**NOTE:** To clear CMOS, the ATX-power connector should be disconnected from the motherboard.

## Chapter 5 Installation

This chapter describes the interface that the TI6VG4 provides for creating a working system. Refer to Figure 3 for the location of the connectors.

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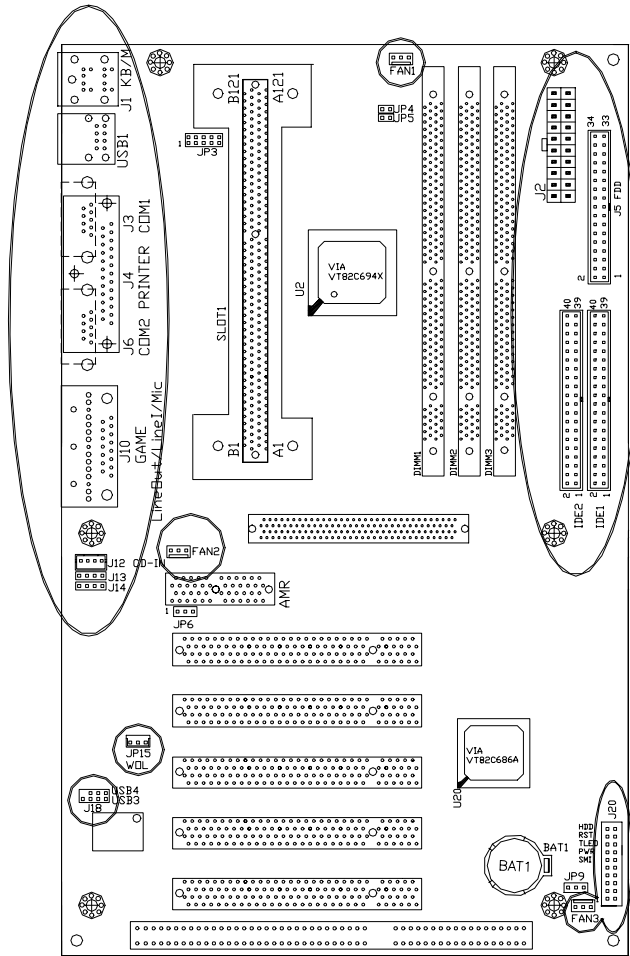
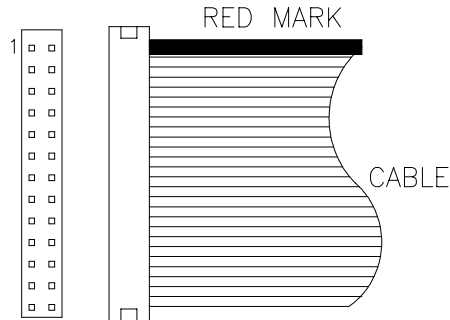


Figure 3: Connector Location on the TI6VG4

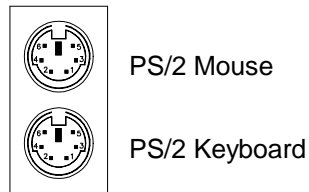
## 5.1 I/O Connectors

The I/O connectors connect the TI6VG4 to the most common peripherals. To attach cables to these connectors, carefully align Pin 1 of the cables to that of the connectors. Refer to Figure 4 for the location and orientation of the connectors.



**Figure 4: Orientation of the I/O Connector**

## 5.2 J1: PS/2 Keyboard and PS/2 Mouse Connectors

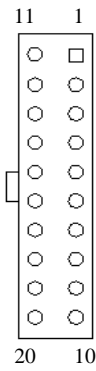


Below are the pin-out assignments of the connectors.

Signal Name	Keyboard	Mouse	Signal Name
Keyboard data	1	1	Mouse data
N.C.	2	2	N.C.
GND	3	3	GND
5V	4	4	5V
Keyboard clock	5	5	Mouse clock
N.C.	6	6	N.C.

### 5.3 J2: ATX Power Supply Connector

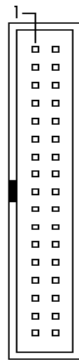
J2 is a 20-pin ATX power supply connector. Refer to the following table for the pin out assignments.



Signal Name	Pin #	Pin #	Signal Name
3.3V	11	1	3.3V
-12V	12	2	3.3V
Ground	13	3	Ground
PS-ON	14	4	+5V
Ground	15	5	Ground
Ground	16	6	+5V
Ground	17	7	Ground
-5V	18	8	Power good
+5V	19	9	5VSB
+5V	20	10	+12V

### 5.4 J5: Floppy Drive Connector

J5 of the TI6VG4 is a 34-pin header and will support up to 2.88MB floppy drives. The following table shows its pin-out assignments.

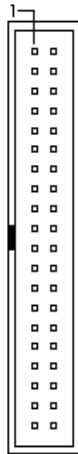


Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change



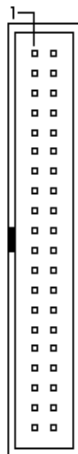
## 5.5 IDE1, IDE2: EIDE Connectors

## IDE1: Primary IDE Connector



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

## IDE2: Secondary IDE Connector

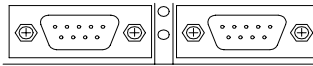


Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK1	29	30	Ground
MIRQ0	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground



## 5.6 J3, J6: Serial Ports

The onboard serial ports of the TI6VG4, J3 and J6, are two DB-9 external connectors. The following table shows the pin-out assignments of these connectors.

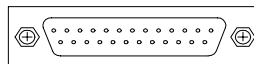


J3 (COM1)      J6 (COM2)

Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
GND, ground	5	10	Not Used

## 5.7 J4: Parallel Port Connector

J4 is a DB-25 external connector as seen in the previous figure. The following table describes the pin-out assignments of this connector.

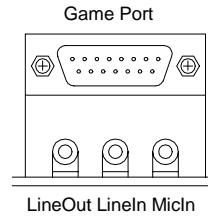


J4 Parallel Port

Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

### 5.8 J10, J7, J8, J9: Game Port, Mic In/Line In/Line Out

J10, J7, J8 and J9 are connectors supporting game port, Line Out, Line In, and Microphone respectively.



### 5.9 J12, J13, J14: CD In and Auxiliary In Connectors

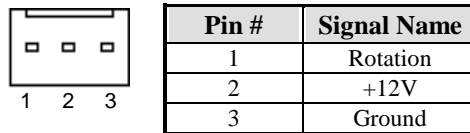
J12 and J13 are the CD-in connectors and J14 is the auxiliary-in connector. Below are their pin out assignments.



Signal Name	Pin #	Pin #	Signal Name
Ground	1	1	Left
Left	2	2	Ground
Ground	3	3	Ground
Right	4	4	Right

### 5.10 FAN1, FAN2, FAN3: Fan Power Connectors

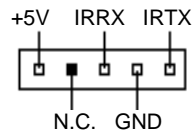
FAN1, FAN2, and FAN3 are the fan power connectors of fans for the CPU, AGP and chassis and chip respectively. The connectors are 3-pin headers that support 12V fans.



Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

### 5.11 J16: IrDA Connector

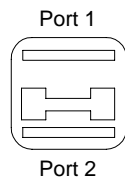
This connector is used for an IrDA connector that supports infrared wireless communication.



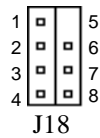
Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

### 5.12 USB1, J18: USB Connectors

USB1 is the standard USB external connector consisting of two ports. J18 is the USB pin-header connector supporting the optional USB external connector for the 3rd and 4th USB ports. The following table shows the pin outs of these ports.



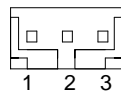
Pin #	Signal Name
1	Vcc
2	USB-
3	USB+
4	Ground



USB Port3	Pin #	Pin #	USB Port4
Vcc	1	5	N.C.
USB-	2	6	USB-
USB+	3	7	USB+
Ground	4	8	Ground

### 5.13 J15: Wake on LAN Connector

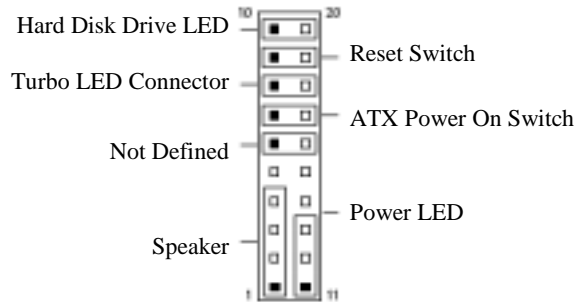
J15 is a 3-pin header for the Wake on LAN function on the motherboard. The following table shows the pin out assignments of this connector. Wake on LAN will function properly only with an ATX power supply with 5VSB that has 750mA.



Pin #	Signal Name
1	+5VSB
2	Ground
3	Wake on LAN

### 5.14 J17: Front Bezel Connectors

The front bezel of the case has a control panel which provides light indication of the computer activities and switches to change the computer status. J17 is a 20-pin header that provides interfaces for the following functions.



#### Speaker: Pins 1 - 4

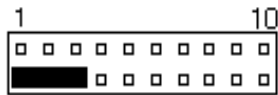
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

#### Power LED: Pins 11 - 13

The power LED indicates the status of the main power switch.



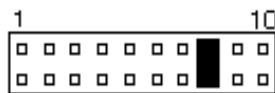
Pin #	Signal Name
11	Power LED
12	No connect
13	Ground

**ATX Power ON Switch: Pins 7 and 17**

This 2-pin connector is an “ATX Power Supply On/Off Switch” on the motherboard that connects to the power switch on the case. When pressed, the power switch will force the motherboard to power on. When pressed again, it will force the motherboard to power off.

**Turbo LED Connector: Pins 8 and 18**

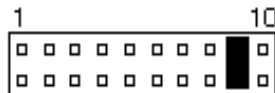
There is no turbo/deturbo function on the motherboard. The Turbo LED on the control panel will always be On when attached to this connector.



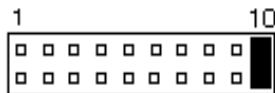
Pin #	Signal Name
8	5V
18	Ground

**Reset Switch: Pins 9 and 19**

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

**Hard Disk Drive LED Connector: Pins 10 and 20**

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	HDD LED
20	5V

## Chapter 6 BIOS Configuration

This chapter describes the different settings available in the Award BIOS. The topics covered in this chapter are as follows:

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Boot Up Floppy Seek	
Boot Up NumLock Status	
IDE HDD Block Mode	
Gate A20 Option	
Memory Parity / ECC Check	
Typematic Rate Setting	
Typematic Rate (Chars/Sec)	
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## 6.1 BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel Pentium II/III processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

## 6.2 BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST(Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

<b>STANDARD CMOS SETUP</b>	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section which displays information on the currently highlighted item in the list.

*NOTE: If your computer cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

*We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.*

### 6.3 Standard CMOS Setup

“Standard CMOS Setup” choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

ROM PCI/ISA BIOS STANDARD CMOS SETUP AWARD SOFTWARE, INC.								
Date (mm:dd:yy) : Wed, Mar 4 1998								
Time (hh:mm:ss) : 00 : 00 : 00								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	Auto	0	0	0	0	0	0	Auto
Primary Slave	Auto	0	0	0	0	0	0	Auto
Secondary Master	Auto	0	0	0	0	0	0	Auto
Secondary Slave	Auto	0	0	0	0	0	0	Auto
Drive A	: 1.44M, 3.5in					Base Memory	: 640K	
Drive B	: None					Extended Memory	: 15360K	
						Other Memory	: 384K	
Video	: EGA / VGA					Total Memory	: 16384K	
Halt On	: All Errors							
ESC : Quit			↑ ↓ → ← : Select Item			PU / PD / + / - : Modify		
F1 : Help			(Shift) F2 : Change Color					

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

#### Date

The date format is:

**Day :** Sun to Sat  
**Month :** 1 to 12  
**Date :** 1 to 31  
**Year :** 1994 to 2079

To set the date, highlight the “Date” field and use the PageUp/ PageDown or +/- keys to set the current time.

### Time

The time format is: **Hour : 00 to 23**  
**Minute : 00 to 59**  
**Second : 00 to 59**

To set the time, highlight the “Time” field and use the <PgUp>/<PgDn> or +/- keys to set the current time.

### Primary HDDs / Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the “Master” and the second is the “Slave”.

To enter the specifications for a hard disk drive, you must select first a “Type”. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to 45 are predefined. Type “User” is user-definable. For the Primary Master/Slave as well as Secondary Master/Slave, you can select “Auto” under the TYPE and MODE fields. This will enable auto detection of your IDE drives and CD-ROM drive during POST.

Press <PgUp>/<PgDn> to select a numbered hard disk type or type the number and press the <Enter> key. The hard disk will not work properly if you enter incorrect information for this field. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually. If you select Type User, related information is asked to be entered to the following items.

**CYLS :** Number of cylinders  
**HEAD :** Number of read/write heads  
**PRECOMP :** Write precompensation  
**LANDZ :** Landing zone  
**SECTOR :** Number of sectors  
**SIZE :** Automatically adjust according to the configuration  
**MODE (for IDE HDD only) :** Auto  
Normal (HD < 528MB)  
Large (for MS-DOS only)  
LBA (HD > 528MB and supports  
Logical Block Addressing)

**NOTE:** The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in these fields. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

**Drive A / Drive B**

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB 1.2MB 720KB 1.44MB 2.88MB  
5.25 in. 5.25 in. 3.5 in. 3.5 in. 3.5 in.

**Video**

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

**Halt On**

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

## 6.4 BIOS Features Setup

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

ROM / PCI ISA BIOS BIOS FEATURES SETUP AWARD SOFTWARE, INC.			
Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Processor Number Feature	: Enabled	D4000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	DC000-DFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Enabled		
Boot Up Numlock Status	: On		
IDE HDD Block Mode	: Enabled		
Gate A20 Option	: Fast		
Memory Parity / ECC Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (chars/Sec)	: 6	ESC : Quit	↑ ↓ → ← : Select Item
Typematic Delay (Msec)	: 250	F1 : Help	PU/PD/+/- : Modify
Security Option	: Setup	F5 : Old Values	(Shift) F2 : Color
PCI /VGA Palette Snoop	: Disabled	F6 : Load BIOS Defaults	
OS Select For DRAM>64MB	: Non-OS2	F7 : Load Setup Defaults	

### Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

**NOTE:** Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. If you will run such a program, disable the Virus Warning feature.

### CPU Internal Cache / External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on 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 even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are **Enabled**.



**CPU L2 Cache ECC Checking**

When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is *Enabled*.

**Processor Number Feature**

Enabling this feature allows the identification of the processor number by the use of certain programs.

**Quick Power On Self Test**

When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

**Boot Sequence**

This field determines the drive that the system searches first for an operating system. The default value is *A, C, SCSI*. The options are :

A, C, SCSI	D, A, SCSI	SCSI, C, A
C, A, SCSI	E, A, SCSI	C only
C, CDROM, A	F, A, SCSI	LS/ZIP, C
CDROM, C, A	SCSI, A, C	

**Swap Floppy Drive**

This item allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *Disabled*.

**Boot Up Floppy Seek**

When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks. By default, this field is set to *Enabled*.

**Boot Up NumLock Status**

This allows you to activate the NumLock function after you power up the system. By default, the system boots up with *NumLock* On.

**IDE HDD Block Mode**

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD). By default, this field is set to *Enabled*.

### **Gate A20 Option**

This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB. The default setting is *Fast*.

### **Memory Parity / ECC Check**

Enabling this feature allows the checking of memory parity / ECC if the memory has this feature. The default setting is *Disabled*.

### **Typematic Rate Setting**

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to *Disabled*.

### **Typematic Rate (Chars/Sec)**

When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

### **Typematic Delay (Msec)**

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to *250msec*.

### **Security Option**

This field allows you to limit access to the System and Setup. The default value is *Setup*. When you select *System*, the system prompts for the User Password every time you boot up. When you select *Setup*, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

### **PCI/VGA Palette Snoop**

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA Cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA Card.

### **OS Select for DRAM > 64MB**

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is *Non-OS/2*.

**Video BIOS Shadow**

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

**C8000 - CBFFF Shadow/DC000 - DFFFF Shadow**

Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether or not optional ROM will be copied to RAM.

### 6.5 Chipset Features Setup

This Setup menu controls the configuration of the motherboard chipset.

ROM PCI/ISA BIOS CHIPSET FEATURES SETUP AWARD SOFTWARE INC.			
Bank 0/1 DRAM Timing	: SDRAM 8ns	Auto Detect DIMM/PCI Clk	: Disabled
Bank 2/3 DRAM Timing	: SDRAM 8ns	Spread Spectrum	: Disabled
Bank 4/5 DRAM Timing	: SDRAM 8ns		
SDRAM Cycle Length	: 3		
DRAM Clock	: Host CLK		
Memory Hole At 15MB Addr	: Disabled		
Read Around Write	: Disabled		
Concurrent PCI/Host	: Enabled		
System BIOS RAM Cacheable	: Enabled		
Video RAM Cacheable	: Enabled		
AGP Aperture Size (MB)	: 64M		
OnChip USB	: Enabled	ESC : Quit	↑ ↓ → ← : Select Item
USB Keyboard Support	: Disabled	F1 : Help	PU/PD/+/- : Modify
OnChip Sound	: Enabled	F5 : Old Values	(Shift) F2 : Color
OnChip Modem	: Disabled	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

#### DRAM Timing

The DRAM timing is controlled by the DRAM Timing Registers. The timing type is dependent on the system design. Slower rates may be required in some system designs to support loose layouts or slower memory.

#### SDRAM Cycle Length

This field sets the SDRAM cycle length to either 2 or 3. The default setting is 3.

#### DRAM Clock

The DRAM clock can be set to *Host CLK* (bus speed) and *66MHz (HCLK - 33M)*, and *133MHz (HCLK+33M)*. By default, this field is set to *Host CLK*.

#### Memory Hole at 15MB Addr.

In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to *Disabled*.

**Read Around Write**

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM. The default setting is *Enabled*.

**Concurrent PCI/Host**

This field enables or disables the concurrent PCI/Host. The default setting is *Disabled*.

**System BIOS Cacheable**

Select *Enabled* to allow caching of the system BIOS ROM at F000h-FFFFh, resulting in better system performance.

**Video BIOS Cacheable**

Select *Enabled* to allow caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance.

**AGP Aperture Size**

The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The options available are 4, 8, 16, 32, 64, 128M and 256. The default setting is *64M*.

**OnChip USB**

This field allows you either to enable or disable the USB function. By default, this field is set to *Enabled*.

**USB Keyboard Support**

Enable this field if your system supports a USB keyboard.

**OnChip Sound**

This field allows you either to enable or disable the audio function integrated in the VIA VT82C686A South Bridge chip. By default, this field is set to *Enabled*.

**OnChip Modem**

This field allows you either to enable or disable the modem function integrated in the VIA VT82C686A South Bridge chip. This function is used in conjunction with the optional AMR riser card. By default, this field is set to *Disabled*.

**Auto Detect DIMM/PCI Clk**

When enabled, the system automatically shuts off clocks of unused DIMM/PCI slots. The default setting is *Disabled*. This field is for CE testing use only.

**Spread Spectrum**

This field sets the value of the spread spectrum. Options are *Disabled*, *0.25%*, and *0.50%*. The default setting is *Disabled*. This field is for CE testing use only.

### 6.6 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn off video display after a period of inactivity.

ROM PCI/ISA BIOS  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

ACPI Function	: Enabled	Primary INTR	: ON
Power Management	: User Define	IRQ3 (COM2)	: Primary
PM Control by APM	: Yes	IRQ4 (COM1)	: Primary
Video Off After	: Suspend	IRQ5 (LPT 2)	: Primary
Video Off Method	: V/H SYNC +Blank	IRQ6 (Floppy Disk)	: Primary
Modem Use IRQ	: 3	IRQ7 (LPT 1)	: Primary
Soft-Off by PWRBTN	: Instant-Off	IRQ8 (RTC Alarm)	: Disabled
PWRON After PW-Fail	: Off	IRQ9 (IRQ2 Redir)	: Secondary
HDD Power Down	: Disabled	IRQ10 (Reserved)	: Secondary
Doze Mode	: Disabled	IRQ11 (Reserved)	: Secondary
Suspend Mode	: Disabled	IRQ12 (PS/2 Mouse)	: Primary
** PM Events **		IRQ13 (Coprocessor)	: Primary
VGA	: OFF	IRQ14 (Hard Disk)	: Primary
LPT & COM	: LPT / COM	IRQ15 (Reserved)	: Disabled
HDD & FDD	: ON	ESC : Quit           ↑ ↓ → ← : Select Item	
PCI Master	: OFF	F1 : Help            PU/PD/+/- : Modify	
Modem Ring Resume	: Disabled	F5 : Old Values     (Shift) F2 : Color	
RTC Alarm Resume	: Disabled	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

#### ACPI Function

This field allows you to enable or disable the ACPI function on the motherboard. By default, this field is set to **Disabled**.

#### Power Management

This field allows you to select the type of power saving management modes. There are four selections for Power Management.

- Min. Power Saving            Minimum power management
- Max. Power Saving           Maximum power management.
- User Define                 Each of the ranges is from 1 min. to 1hr.
- Except for HDD Power Down which ranges from 1 min. to 15 min.
- (Default)

**NOTE:** In order to enable the CPU overheat protection feature, the Power Management field should not be set to Disabled.

### PM Control by APM

This field allows you to use the Advanced Power Management device to enhance the Max. Power Saving mode and stop the CPU's internal clock. If the Max. Power Saving is not enabled, this will be preset to NO.

### Video Off After

When enabled, this feature allows the VGA adapter to operate in a power saving mode. The options are as follows:

- N/A Monitor will remain on during power saving modes.
- Suspend Monitor blanked when the system enters the Suspend mode.
- Standby Monitor blanked when the system enters Standby mode
- Doze Monitor blanked when the system enters any power saving mode.

### Video Off Method

This field defines the Video Off features. There are three options.

- V/H SYNC + Blank Default setting, blank the screen and turn off vertical and horizontal scanning.
- DPMS Allows the BIOS to control the video display card if it supports the DPMS feature.
- Blank Screen This option only writes blanks to the video buffer.

### Modem Use IRQ

This field defines the IRQ being used by the modem. By default, the IRQ is set to 3.

### Soft-Off by PWRBTN

This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds. The default value is *Instant Off*.

### PWRON After PW-Fail

In case of power failure, the system can be configured to power on or to remain off when the power returns. These settings are *Former-Sts*, *On* and *Off*. The default setting for this field is *Off*.



**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 a 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.

**PM Events**

The VGA, LPT & COM, HDD & FDD, PCI Master, Modem Ring Resume, RTC Alarm Resume and Primary INTR section are I/O events which can prevent the system from entering a power saving mode or can awaken the system from such a mode. 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. The default value is *Off*. When set On, activity will neither prevent the system from going into a power management mode nor awaken it. The IRQ section sets the wake-up call of the system. If activity is detected from any enabled IRQ channels in the left-hand group, the system wakes up from suspended mode.

### 6.7 PNP/PCI Configuration

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

ROM PCI/ISA BIOS  
PNP/PCI CONFIGURATION  
AWARD SOFTWARE INC.

PNP OS Installed	: No	CPU to PCI Write Buffer	: Enabled
Resources Controlled by	: Manual	PCI Dynamic Bursting	: Enabled
Reset Configuration Data	: Disabled	PCI Master 0 WS Write	: Disabled
		PCI Delay Transaction	: Enabled
IRQ-3 assigned to	: Legacy ISA	PCI#2 Access #1 Retry	: Disabled
IRQ-4 assigned to	: Legacy ISA	AGP Master 1 WS Write	: Enabled
IRQ-5 assigned to	: PCI/ISA PnP	AGP Master 1 WS Read	: Enabled
IRQ-7 assigned to	: Legacy ISA		
IRQ-9 assigned to	: PCI/ISA PnP	Assign IRQ For USB	: Enabled
IRQ-10 assigned to	: PCI/ISA PnP	Assign IRQ For VGA	: Enabled
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		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP	ESC : Quit	↑ ↓ ← : Select Item
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values	(Shift) F2 : Color
DMA-6 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

#### PNP OS Installed

This field allows you to specify if the operating system installed in your system is plug and play aware.

**NOTE:** Operating systems such as DOS, OS/2, and Windows 3.x do not use PnP.

#### Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically. However, this capability needs you to use a PnP operating system such as Windows 95. The default value is **Manual**.

#### Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is **Disabled**.

#### IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to

These fields allow you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.

**CPU to PCI Write Buffer**

When enabled, this option increases the efficiency of the PCI bus to and speed up the execution in the processor. By default, this field is set to *Enabled*.

**PCI Dynamic Bursting**

When enabled, this option combines several PCI cycles into one. By default, this field is set to *Enabled*.

**PCI Master 0 WS Write**

When enabled, this option increases the write cycle speed. By default, this field is set to *Disabled*.

**PCI Delay Transaction**

When enabled, this option delays PCI data transaction. By default, this field is set to *Enabled*.

**PCI#2 Access #1 Retry**

This item enables PC#2 Access #1 attempts. By default, this field is set to *Disabled*.

**AGP Master 1 WS Write**

When enabled, writes to the AGP bus are executed with 1 wait states. By default, this field is set to *Enabled*.

**AGP Master 1 WS Read**

When enabled, reads to the AGP bus are executed with 1 wait states. By default, this field is set to *Enabled*.

**Assign IRQ for USB/VGA**

These fields allow you to enable or disable the IRQ for USB and VGA. By default, these fields are enabled.

### 6.8 Load BIOS Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	CPU SPEED SETTING
BIOS FEATURES SETUP	INTEGRATED PERIPHERALS
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGE	D
PNP/PCI CONF	DETECTION
<b>LOAD BIOS DEF</b>	UP
LOAD SETUP DEF	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Load BIOS Defaults except Standard CMOS Setup	

To load BIOS defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

### 6.9 Load Setup Defaults

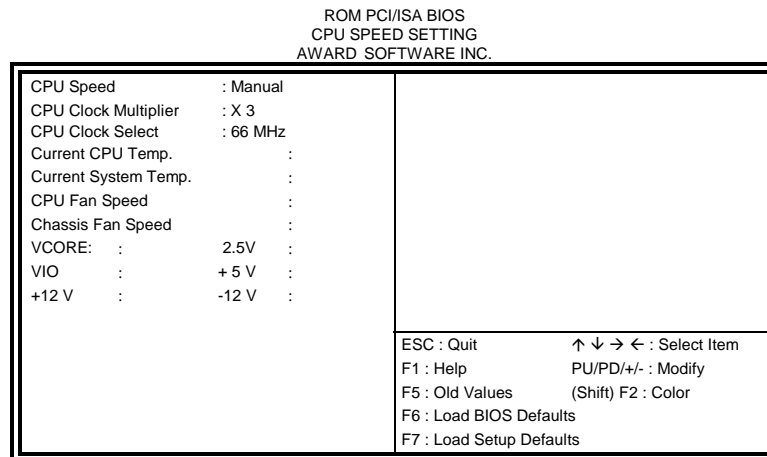
This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	CPU SPEED SETTING
BIOS FEATURES SETUP	INTEGRATED PERIPHERALS
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGE	D
PNP/PCI CONF	DETECTION
LOAD BIOS DEF	UP
<b>LOAD SETUP DEF</b>	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Load BIOS Defaults except Standard CMOS Setup	

To load SETUP defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

### 6.10 CPU Speed Setting



#### CPU Speed, CPU Clock Multiplier, CPU Clock Select

The TI6VG4 motherboard allows users to set the CPU speed through the BIOS. The parameters in setting the CPU speed include *CPU Clock Multiplier* and *CPU Clock*.

In the initial setup, the system automatically detects the bus speed (front side bus) of the CPU (66MHz or 100MHz). Press the ↑ and ↓ keys to change the CPU speed or press the PageUp or PageDown key to see the selections for CPU Clock Multiplier and CPU Clock Select.

CPU speed configuration examples:

#### A. CPU-frequency auto-detect

<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">CPU Speed</td> <td style="padding: 2px;">: 300MHz (100x3)</td> </tr> <tr> <td colspan="2" style="padding: 2px;">Options for 100MHz bus :</td> </tr> <tr> <td style="padding: 2px;">: 300MHz (100x3)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 350MHz (100x3.5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 400MHz (100x4)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 450MHz (100x4.5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 500MHz (100x5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 550MHz (100x5.5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 600MHz (100x6)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 650MHz (100x6.5)</td> <td style="padding: 2px;"></td> </tr> </table>	CPU Speed	: 300MHz (100x3)	Options for 100MHz bus :		: 300MHz (100x3)		: 350MHz (100x3.5)		: 400MHz (100x4)		: 450MHz (100x4.5)		: 500MHz (100x5)		: 550MHz (100x5.5)		: 600MHz (100x6)		: 650MHz (100x6.5)		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">CPU Speed</td> <td style="padding: 2px;">: 233MHz (66x3.5)</td> </tr> <tr> <td colspan="2" style="padding: 2px;">Options for 66MHz bus :</td> </tr> <tr> <td style="padding: 2px;">: 200MHz (66x3)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 233MHz (66x3.5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 266MHz (66x4)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 300MHz (66x4.5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 333MHz (66x5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 366MHz (66x5.5)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 400MHz (66x6)</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">: 433MHz (66x6.5)</td> <td style="padding: 2px;"></td> </tr> </table>	CPU Speed	: 233MHz (66x3.5)	Options for 66MHz bus :		: 200MHz (66x3)		: 233MHz (66x3.5)		: 266MHz (66x4)		: 300MHz (66x4.5)		: 333MHz (66x5)		: 366MHz (66x5.5)		: 400MHz (66x6)		: 433MHz (66x6.5)	
CPU Speed	: 300MHz (100x3)																																								
Options for 100MHz bus :																																									
: 300MHz (100x3)																																									
: 350MHz (100x3.5)																																									
: 400MHz (100x4)																																									
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CPU Speed	: 233MHz (66x3.5)																																								
Options for 66MHz bus :																																									
: 200MHz (66x3)																																									
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: 266MHz (66x4)																																									
: 300MHz (66x4.5)																																									
: 333MHz (66x5)																																									
: 366MHz (66x5.5)																																									
: 400MHz (66x6)																																									
: 433MHz (66x6.5)																																									

B. Manual

CPU Speed	Manual
CPU Clock Multiplier	: X 3
CPU Clock Select	: 100MHz

Parameters:  
Clock Multiplier = 3/3.5/4.5/5/5.5/6/6.5/7/7.5/8  
CPU Clock Select = 100MHz  
103MHz  
112MHz  
133MHz  
140MHz  
150MHz

CPU Speed	Manual
CPU Clock Multiplier	: X 3.5
CPU Clock Select	: 66MHz

Parameters:  
Clock Multiplier = 3/3.5/4.5/5/5.5/6/6.5/7/7.5/8  
CPU Clock Select = 66MHz  
68MHz  
75MHz  
83MHz

**NOTE:** *Overclocking could cause the system not to boot. When this happens, turn off the computer by pressing the power button and turn it on again by pressing the **Insert** key and the power button simultaneously. Then press the **Delete** key to enter BIOS Setup and configure the CPU speed.*

**Current CPU/System Temperature**

These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.

**CPU Fan Speed/Chassis Fan Speed**

These read-only fields show the current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.

**VCORE/VIO/12V/2.5V/5V**

These read-only fields show the current voltages in the voltage regulators and power supply as monitored by the hardware monitoring IC.

### 6.11 Integrated Peripherals

This option sets your hard disk configuration, mode and port.

ROM PCI/ISA BIOS INTEGRATED PERIPHERALS AWARD SOFTWARE INC.	
OnChip IDE Channel 0	: Enabled
OnChip IDE Channel 1	: Enabled
IDE Prefetch Mode	: Disabled
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 AGP Display First	: AGP
Onboard FDD Controller	: Enabled
Onboard Serial Port 1	: 3F8/IRQ4
Onboard Serial Port 2	:
UART 2 Mode	:
Onboard Parallel Port	:
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	: Enabled
MPU-401 I/O Address	: 330-333H
Game Port (200-207H)	: Enabled
ESC : Quit                    ↑ ↓ ← : Select Item F1 : Help                     PU/PD/+/- : Modify F5 : Old Values               (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

#### OnChip IDE Channel0/1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

#### IDE Prefetch Mode

This field allows your hard disk controller to use prefetch mode to transfer data to increase the performance.

#### Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

**Primary/Secondary Master/Slave UDMA**

These fields allow your system to improve disk I/O throughput with the Ultra DMA feature. The options are *Auto* and *Disabled*.

**Init AGP Display First**

This field allows the system to initialize first the VGA card in the AGP slot on the motherboard when system is turned on.

**Onboard FDD Controller**

Select *Enabled* if your system has a floppy disk controller (FDC) installed on the motherboard and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select *Disabled* in this field. This option allows you to select the onboard FDD port.

**Onboard Serial/Parallel Port**

These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Parallel Port	378H/IRQ7

**UART 2 Mode**

This field determines the UART 2 mode in your computer. The default value is *Standard*.

**Onboard Legacy Audio**

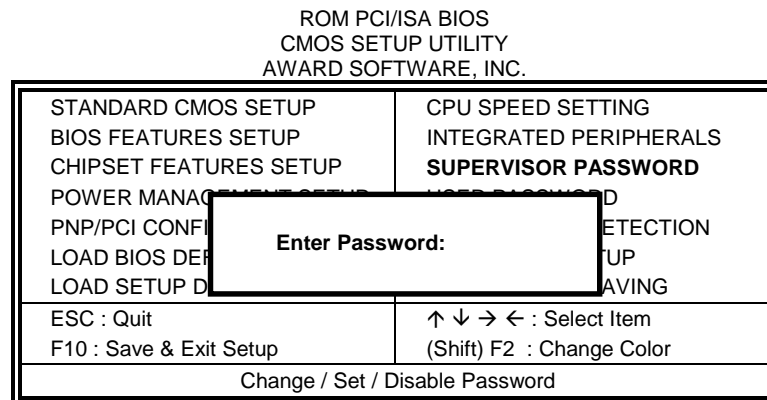
When this field is enabled, other options of the on board audio in this setup can be configured. These options included Sound Blaster, SB I/O Base Address, SB IRQ Select, SB DMA Select, MPU-401, MPU-401 I/O Address, and Game Port.



### 6.12 Supervisor / User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.



### 6.13 IDE HDD Auto Detection

This option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.

ROM PCI/ISA BIOS  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master:								
Select Primary Master Option (N=SKIP) : N								
OPTIONS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
1 (Y)	0	0	0	0	0	0	0	NORMAL
NOTE: Some OSes (like SCO-UNIX) must use "NORMAL" for installation								
<b>ESC: SKIP</b>								

Up to four IDE drives can be detected, with parameters for each appearing in sequence inside a box. To accept the displayed entries, press the "Y" key; to skip to the next drive, press the "N" key. If you accept the values, the parameters will appear listed beside the drive letter on the screen.

### 6.14 Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	CPU SPEED SETTING
BIOS FEATURES SETUP	INTEGRATED PERIPHERALS
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGE	D
PNP/PCI CONF	DETECTION
LOAD BIOS DEF	UP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Save Data to CMOS & Exit Setup	

### 6.15 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	CPU SPEED SETTING
BIOS FEATURES SETUP	INTEGRATED PERIPHERALS
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGE	D
PNP/PCI CONF	DETECTION
LOAD BIOS DEF	UP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Abandon all Data & Exit Setup	

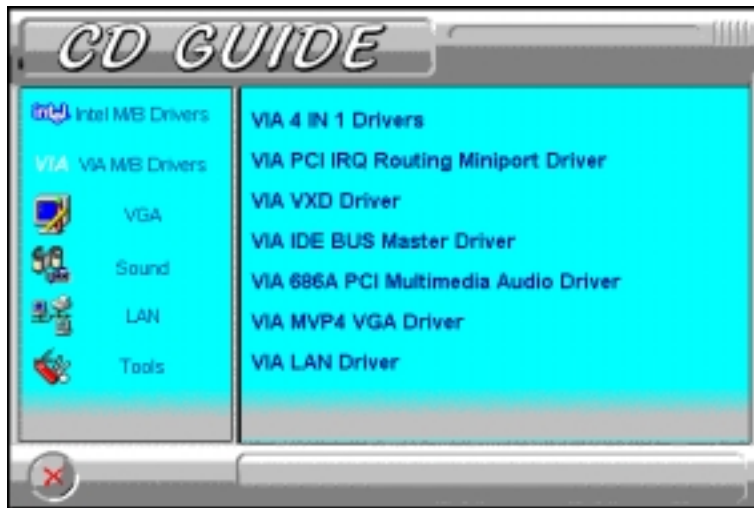
## Chapter 7 VIA Drivers Installation Guide

This chapter describes the installation procedure for the drivers from VIA including 4-in-1 driver, DirectX, and audio drivers.

**NOTE:** *If you are using Windows 95, please install USB supplement to OSR2 from the original Windows 95 CD or download it from Microsoft's web site after you have installed Windows 95 (even before you have started to install the drivers mentioned in this chapter.)*

### 7.1 Windows 98 4-in-1 Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selection for Intel drivers and VIA drivers. Click on **VIA M/B Drivers** and the following window will appear. Click **VIA 4 IN 1 Drivers**.



2. When the **Welcome** screen appears, click **Next** to continue with the Setup program.
3. To accept the VIA Service Pack license agreement, click **Yes**.
4. Click **Next** for the setup program to install the drivers for Bus Master PCI IDE, AGP VxD, VIA Chipset Functions' Registry and IRQ Routing Miniport Drivers.



5. Click **Next** to install (Ultra) DMA for IDE driver.
6. Click on the **Enable/Disable (Ultra) DMA** checkbox, and then click **Next** to continue the installation process.
7. When the **Choose Destination Location** window appears, click **Next** to install **VIA Service Pack** in the folder name shown.

8. When the **Select Program Folder** window appears, click **Next** for Setup to add the program icons to the **VIADMATool** program folder. You may, however, type a new folder name or select one from the existing Folders list.



9. When the **VIA\_GART AGP Driver 3.55** window appears, click **Next** to install **VIA AGP VxD in turbo mode**.

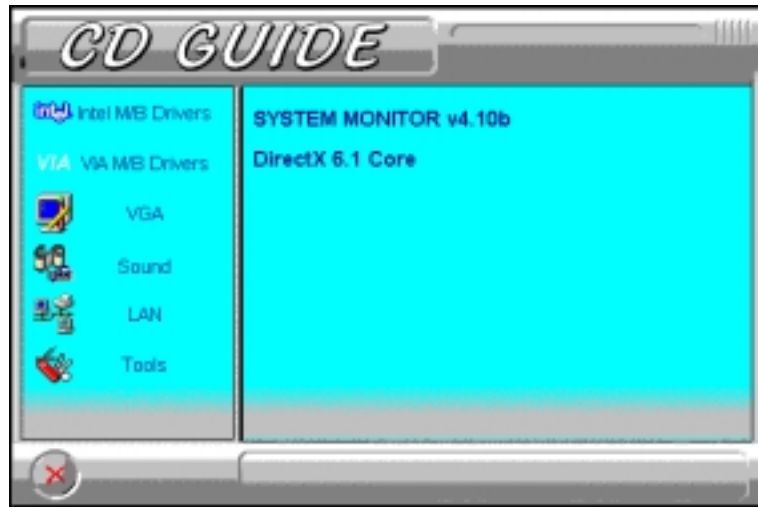
10. When the **IRQ Routing Driver 1.30** window appears, click **Next** to install the **VIA IRQ Routing Miniport Driver**.

11. When the **VIA Chipset Functions' Registry** window appears, click **Next** to install the **VIA Chipset Functions' Registry**.

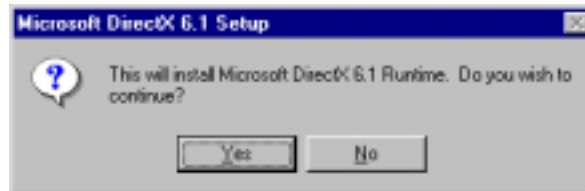
12. When Setup has finished copying files to your computer, click **Finish** to restart your computer and for changes to take effect.

## 7.2 Windows 98/95 DirectX Installation

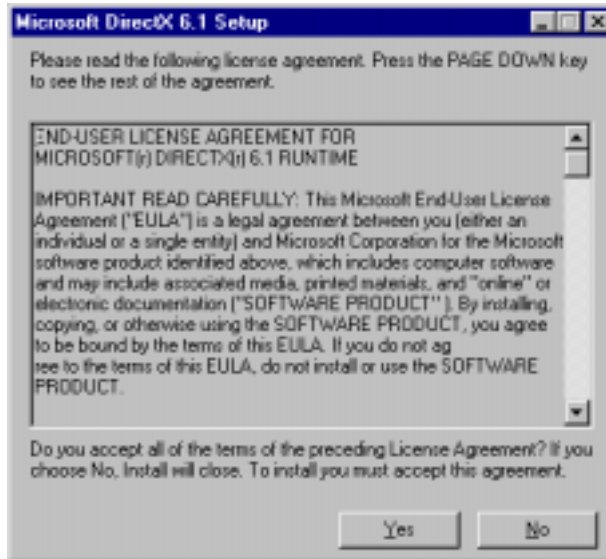
1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on **Tools** and the following window will appear. Click **DirectX 6.1 Core**.



2. Click **Yes** to install Microsoft DirectX 6.1 Runtime.



3. Click **Yes** to continue.



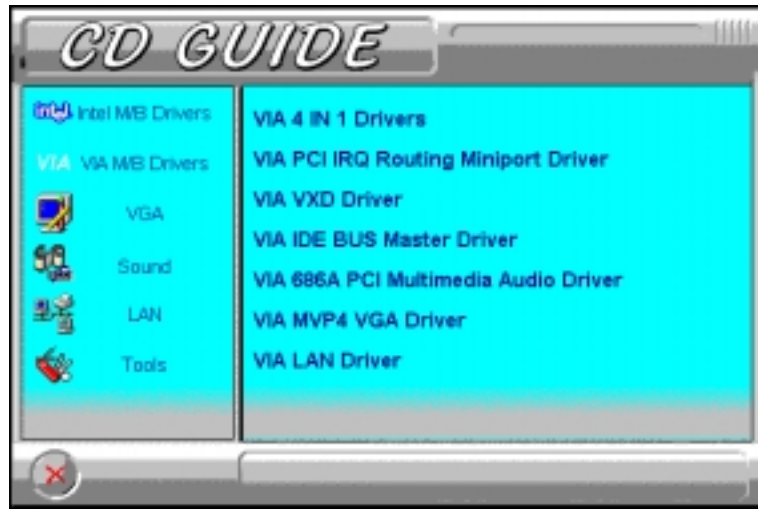
4. When the necessary files have been copied, press **OK** to restart the computer and changes to take affect.





### 7.3 Windows 98 Audio Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on **VIA M/B Drivers** and the following window appears. Click **VIA 686A PCI Multimedia Audio Driver**.



2. When the **Welcome** screen appears, click **Next** to proceed with the audio driver installation.

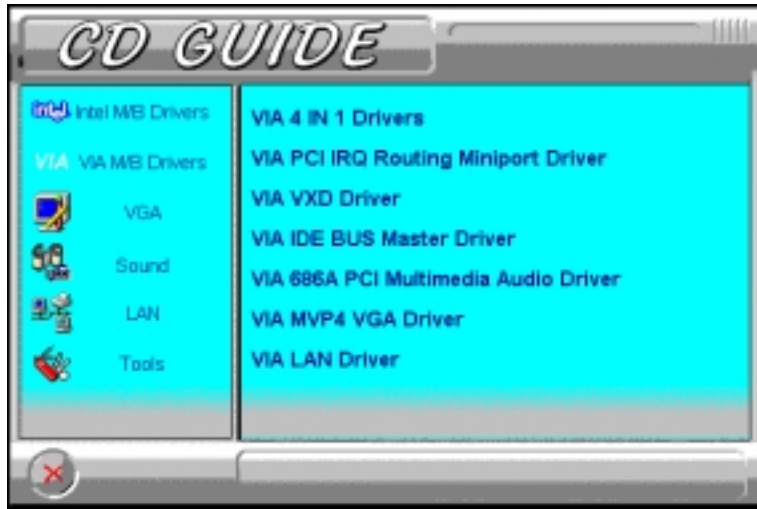
3. The **Select Components** window will appear. Click **Next** to install the audio driver.

4. After the necessary files are copied, click **Finish** for the computer the restart.

5. When Windows has restarted, a message will appear prompting you to insert the Windows 98 CDROM. Insert the Windows 98 CD-ROM and click **OK**.

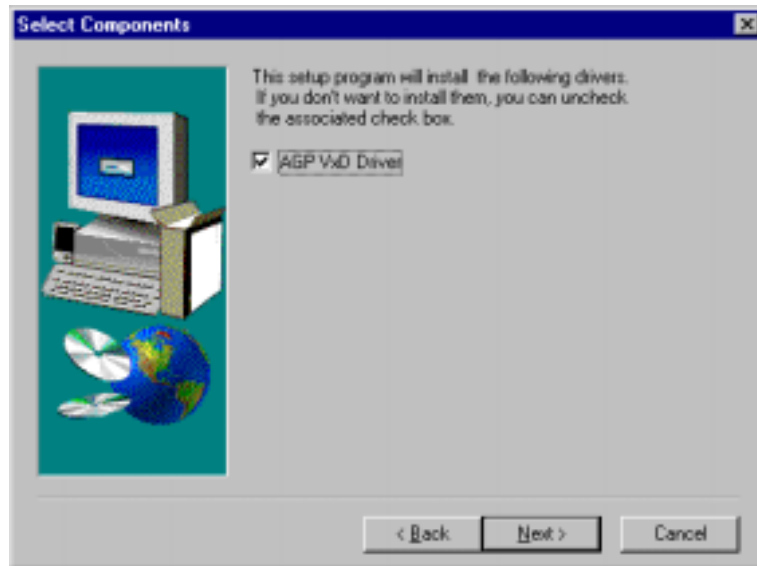
#### 7.4 Windows 98SE 4-in-1 Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selection for Intel drivers and VIA drivers. Click on **VIA M/B Drivers** and the following window will appear. Click **VIA 4 IN 1 Drivers**.



2. When the **Welcome** screen appears, click **Next** to continue with the Setup program.
3. To accept the VIA Service Pack license agreement, click **Yes**.

4. Click **Next** for the setup program to install the AGP VxD Driver. Please note that there are no check box for the Bus Master PCI IDE drivers, VIA Chipset Functions' Registry and IRQ Routing Miniport Drivers (unlike Windows 98 and Windows 95), because these drivers are already supported by Windows 98SE.

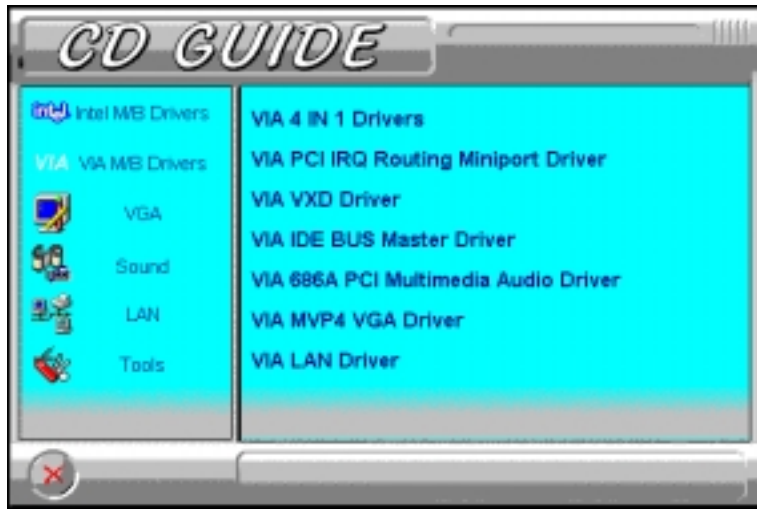


5. When the **VIA\_GART AGP Driver 3.55** window appears, click **Next** to install **VIA AGP VxD in turbo mode**.

6. When Setup has finished copying files to your computer, click **Finish** to restart your computer and for changes to take effect.

## 7.5 Windows 98SE Audio Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on **VIA M/B Drivers** and the following window appears. Click **VIA 686A PCI Multimedia Audio Driver**.



2. When the **Welcome** screen appears, click **Next** to proceed with the audio driver installation.

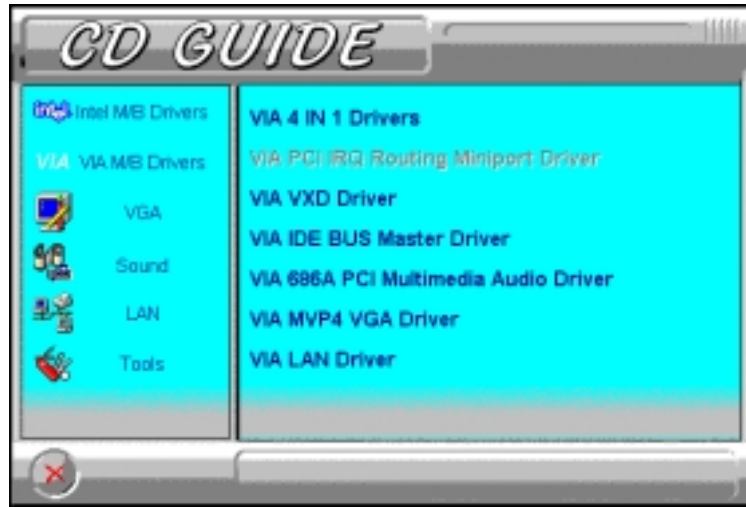
3. The **Select Components** window will appear. Click **Next** to install the audio driver.

4. After the necessary files are copied, click **Finish**.

5. When Windows has restarted, a message will appear prompting you to insert the Windows 98 Second Edition CDROM. Insert the Windows 98 CDROM and click **OK**. After the necessary files are copied, restart your computer for changes to take effect.

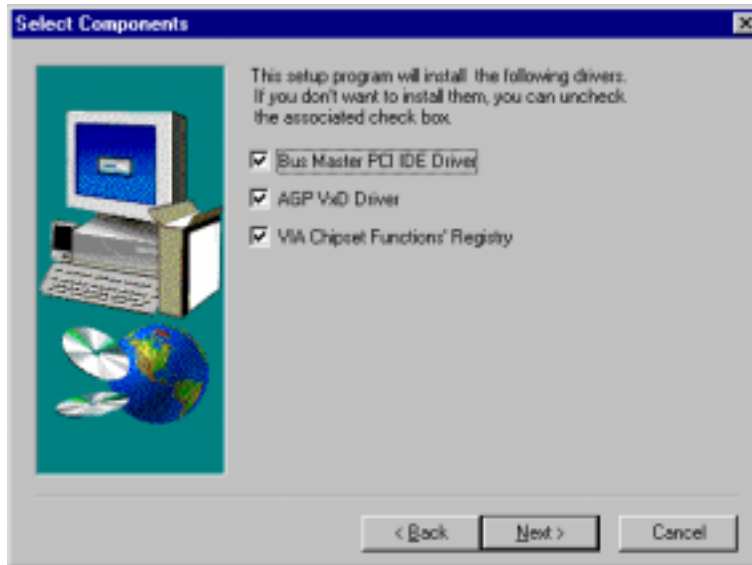
## 7.6 Windows 95 4-in-1 Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selection for Intel drivers and VIA drivers. Click on **VIA M/B Drivers** and the following window will appear. Click **VIA 4 IN 1 Drivers**.

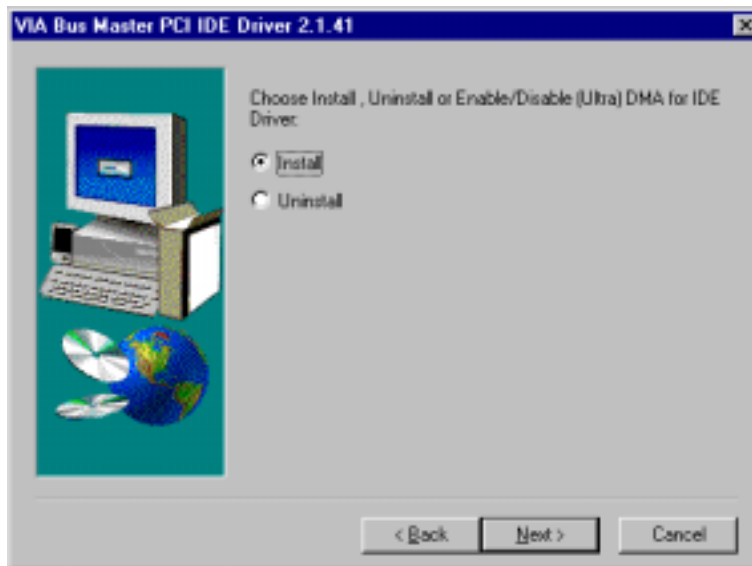


2. Click **Next**. to continue the installation process, and then click **Yes** to agree with the license agreement.

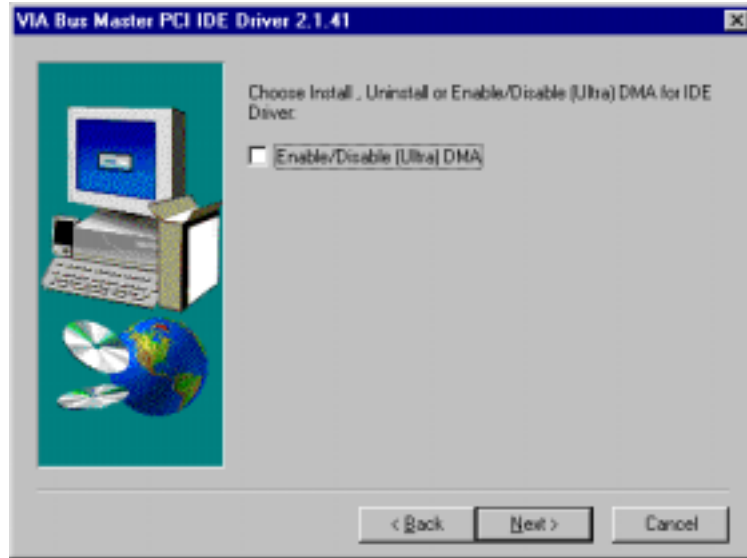
3. Click **Next** to install all the drivers shown below.



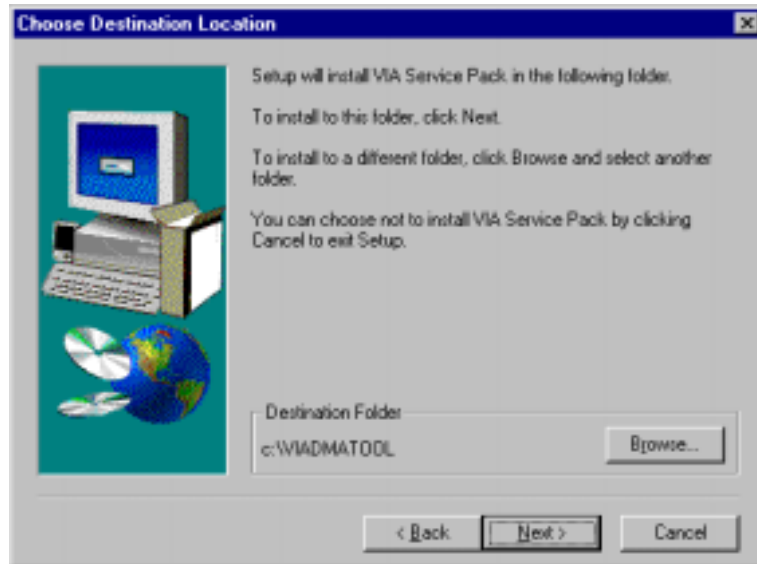
4. Click **Next** to install the (Ultra) DMA for IDE driver.



5. Click on the **Enable/Disable (Ultra) DMA** checkbox, and click **Next** to enable (Ultra) DMA.



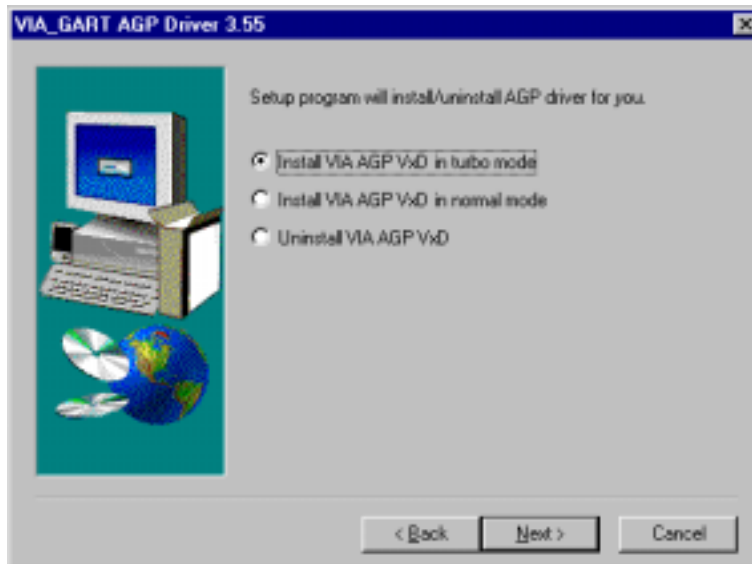
6. To install **VIA Service Pack**, click **Next**.



7. Click **Next** to accept the listed folder name or select from the existing folders list, then click **Next**.

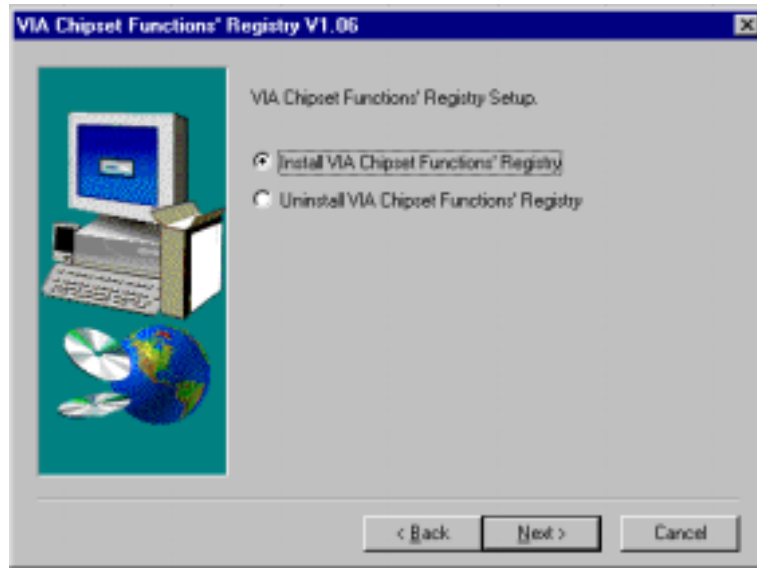


8. Click **Next** to install the VIA AGP driver.





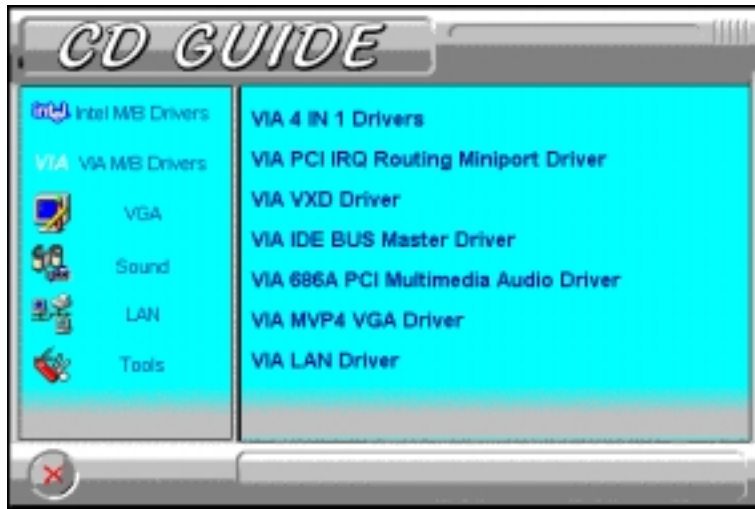
9. Click **Next** to install the VIA Chipset Functions' Registry.



10. When Setup has finished copying files to your computer, you must restart Windows or your computer before you can use the program. Remove any disks from their drives, and then click **Finish** to complete setup.

## 7.7 Windows 95 Audio Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on **VIA M/B Drivers** and the following window appears. Click **VIA 686A PCI Multimedia Audio Driver**.



2. The next screen will ask you to remove the Audio Device from the Device Manager. If you have already removed the audio device, click **Yes** to continue the audio driver installation. (If you have not, click **No** and exit the installation process and remove the audio device before installing the audio drivers.)

3. To continue with the VIA PCI Audio Driver Installation, click **Next** to agree with the license agreement.

4. When the **Select Components** window appears, click **Next** to install the audio driver.

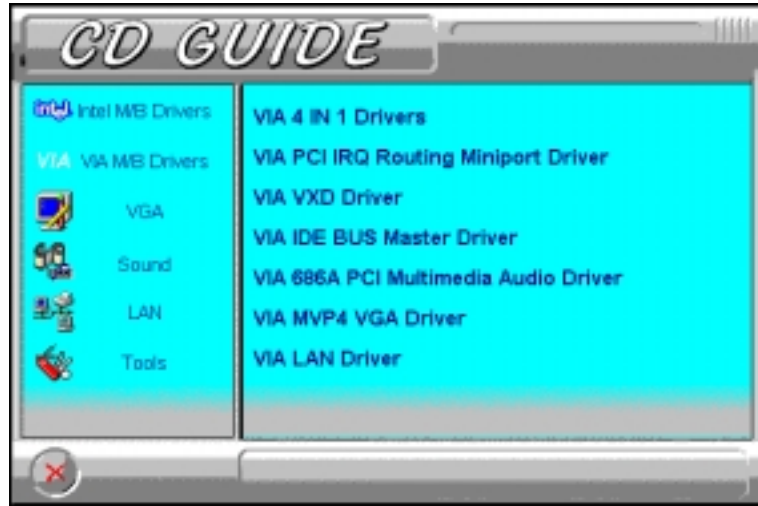
5. After the necessary files are copied, click **Finish** for the computer the restart.

6. When Windows has restarted, it will be able to detect the VIA PCI Audio Controller. Click **Next** and then **Finish**. When prompted to insert the Windows 95 CD-ROM, do so accordingly and then click **OK**.

## 7.8 Windows NT 4.0 Audio Driver Installation

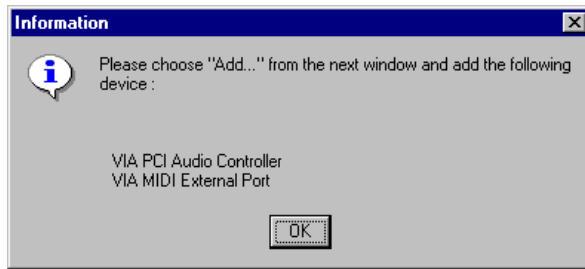
**IMPORTANT:** You should install the Windows NT 4.0 Service Pack 4 or higher first before installing the VIA 686A PCI multimedia audio device drivers. If you don't have Windows NT 4.0 Service Pack 4 or higher, please contact your software vendor or download it from Microsoft's web site.

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on **VIA M/B Drivers** and the following window appears. Click **VIA 686A PCI Multimedia Audio Driver**.

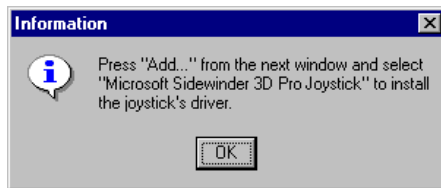
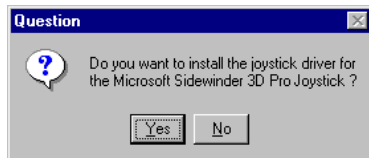


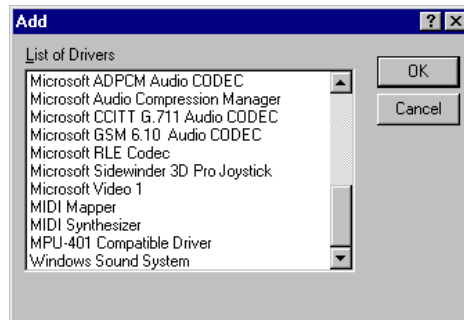
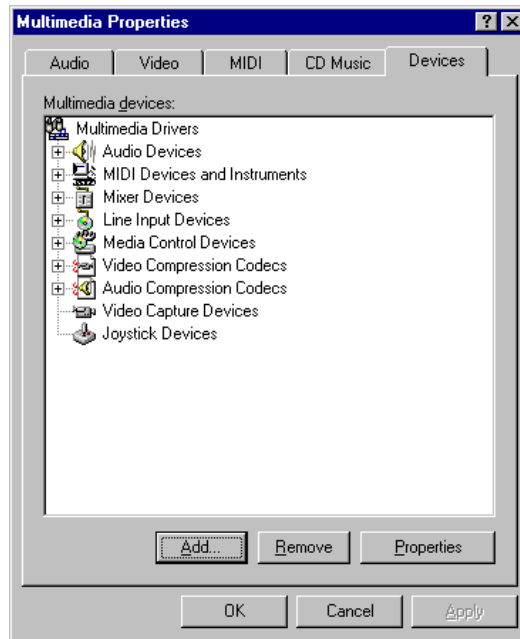
2. When the **Welcome** screen appears, click **Next** to proceed with the audio driver installation.
3. The **Select Components** window will appear. Click **Next** to install the audio driver.

4. When the **Information** window appears, click **OK**. Please choose “**Add...**” from the next window and add the following device: VIA PCI Audio Controller and VIA MIDI External Port.

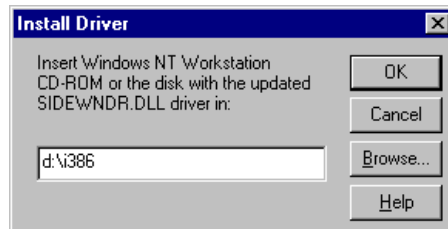


5. After the VIA PCI Audio Controller and VIA MIDI External Port devices are added, you will be asked whether to install the driver for the Microsoft Sidewinder 3D Pro Joystick. Click **Yes**. You will be prompted to press “**Add...**” from the next window and select “**Microsoft Sidewinder 3D Pro Joystick**” to install the joystick’s driver. Refer to the following figures.

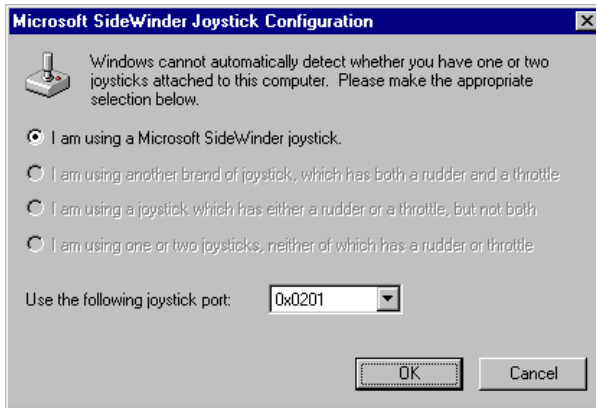




6. Upon adding the **Microsoft Sidewinder 3D Pro Joystick**, insert the Windows NT CD-ROM or the disk with the updated `sidewndr.dll` driver.

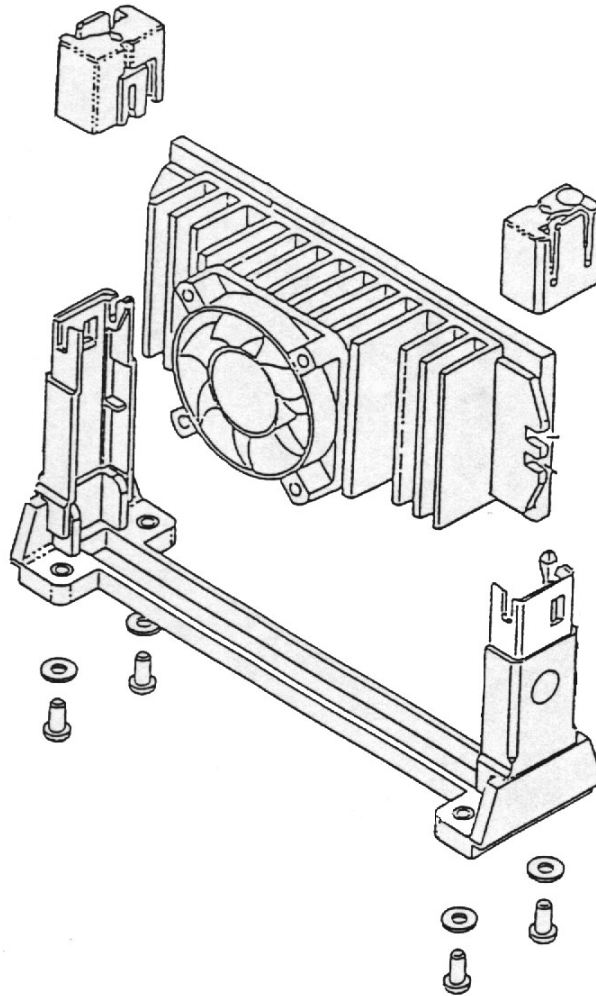


7. When the **Microsoft SideWinder Joystick Configuration** window appears, click **OK** to accept the default configuration. Then, restart the computer for changes to take effect.



## Appendix

### A. Slot 1 Retention Mechanism



The retention mechanism that comes with your motherboard, as seen in the above figure, accommodates Pentium II/III processors. For **Celeron** processors, place the two caps supplied on both ends after installing the processor to secure the installation.

## **Additions & Errata**

The manufacturer sees to it that the most up-to-date and accurate information are contained in this manual. This section would contain page insert(s) of additional information, updates or corrections that the user should know to ensure that proper configuration and setup of the motherboard is made.