TI5VGA

Socket 7 MVP3

ATX Motherboard

User's Manual

Version 1.0A

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Chapter 1 Introduction

This manual is designed to give you information on the TI5VGA Motherboard. It is divided into the following six sections:

- **Introduction**
- **Specifications**
- **Hardware Description**
- **Hardware Settings**
- **Installation**
- **BIOS Configuration**

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 TI5VGA Motherboard**
- ✧ **This user's manual**
- ✧ **1 IDE ribbon cable**
- ✧ **1 floppy ribbon cable**
- ✧ **1 UDMA66 ribbon cable (optional)**
- ✧ **1 CD containing Bus Master IDE drivers, flash utility, and other drivers**

Note: **The ATA-66 IDE cable that is used in conjunction with Ultra DMA/66 hard disks is optional. Refer to the figure below on how to connect the cable.**

Chapter 2 Specifications

Based on VIA's MVP3 chipset, the TI5VGA is an ATX Socket 7 motherboard that supports all the features to make a Microsoft PC'97 compliant PCI system.

The TI5VGA comes with an Accelerated Graphics Port (AGP) slot, power management functionality that is compliant with ACPI (Advanced Configuration and Power Interface) and legacy APM requirements. In addition to standard PIO and DMA mode operation, it features Ultra DMA33/66 for improved disk I/O throughput. The main features of this motherboard are listed as follows:

Main Processor

Intel Pentium 100/133/150/166/200
Intel Pentium MMX (P55C) 100/133/166/200/233
Cyrix 6x86/6x86L P166+/P200+
Cyrix 6x86MX PR166/PR200/PR233/PR266
Cyrix 6x86MII PR266/PR300/PR333/PR366
AMD K5 PR100/PR133/PR166
AMD K6 166/200/233/266/300
AMD K6-2/300/333/350/366/380/400/450
IDT WinChip C6 180/200/225MHz
IDT WinChip2-3D 200/225/266MHz

L2 Cache

1MB Pipelined Burst Synchronous SRAM onboard, 2MB optional

Main Memory

Three 168-pin DIMM sockets
DIMMs: EDO DRAM or SDRAM (Synchronous DRAM)
DIMM Size: 8MB, 16MB, 32MB, 64MB, 128MB

Chipset

VIA chipset (VT82C598MVP, VT82C686A)

Onboard I/O

VIA VT82C686A chip supports two serial, one parallel, one floppy drive interface and IrDA support

Onboard Bus Mastering EIDE

Two EIDE interfaces for up to four devices, support PIO Mode 3/4 or Ultra DMA33/66 IDE Hard Disk and ATAPI CD-ROM.

***NOTE**: A UDMA66 cable should be used for UDMA66 interface. Under Windows NT 4.0, you need to install Windows NT Service Pack 4.)*

BIOS

Licensed BIOS with additional features:

- FLASH EEPROM (128KB) for BIOS update
- ISA Plug and Play (PnP) extension
- Power management

Hardware Monitoring IC

VT82C686A includes the hardware monitoring feature that monitors the system temperature, voltages and fan speed. With the use of a system management utility, the hardware status can be checked and warning message can be displayed when there is a problem.

Windows 95/98 Shut-Down

This allows the PC to power off via Windows 95/98 operating system.

PC97 Compliance

The TI5VGA implements BIOS and hardware designs that meet PC97 standards and is fully compatible with all Windows operating systems.

Year 2000 Compliant BIOS

The onboard Award BIOS is Year 2000 Compliant and will pass software applications that have the tendency to invoke INT1AH function 04H such as year2000.exe utility released by NSTL.

Expansion Slots

Six 32-bit PCI master slots
One AGP slot (Accelerated Graphics Port)

Form Factor

ATX, 12”x 7.48” (30.5cm x 19cm)

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Chapter 3 Hardware Description

This chapter briefly describes each of the major features of the TI5VGA motherboard. The layout of the board is shown in Figure 1 which shows the locations of the key components. The topics covered in this chapter are as follows:

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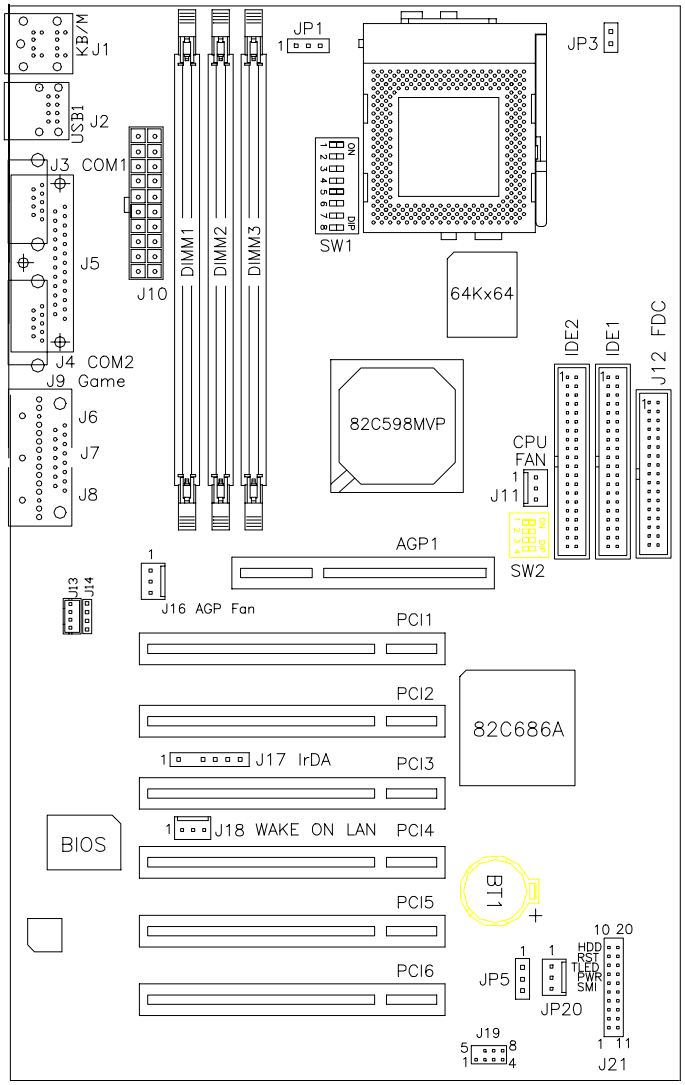

Figure 1: Layout of the TI5VGA Motherboard

3.1 Processor and CPU Voltage

The TI5VGA is designed to take a Socket 7-based processor with a bus speed of 66, 75, 83 and 100 MHz. The internal clock of the CPU can be multiples of 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 and 5.5 of the bus clock, the CPU frequency can be 100 to 550MHz.

The onboard CPU voltage regulator provides support for CPUs Vcore which require voltage other than 3.3V such as 2.8V, and/or power consumption higher than 10 watts.

3.2 L2 Cache Memory

The TI5VGA supports 1MB P.B. (Pipelined Burst) Synchronous Cache. 2MB is optional. The P.B. Synchronous Cache boosts the system's performance, 10% higher than regular Asynchronous Cache.

3.3 Main Memory

The TI5VGA motherboard supports three 168-pin DIMMs (Dual In-line Memory Module) sockets. DIMM modules can be 8MB, 16MB, 32MB, 64MB and 128MB in EDO DRAM or SDRAM type. DIMM1, DIMM2 or DIMM3 bank can be populated first. Examples are shown in the following table on how to configure the memory size.

168-pin DIMM (3.3V) – SDRAM or EDO DRAM

Bank0 (DIMM3)	Bank1 (DIMM2)	Bank2 (DIMM1)	Total Memory
8MB	-----	-----	8MB
16MB	-----	-----	16MB
32MB	-----	-----	32MB
64MB	-----	-----	64MB
128MB	-----	-----	128MB
8MB	8MB	-----	16MB
16MB	8MB	-----	24MB
32MB	8MB	-----	40MB
64MB	8MB	-----	72MB
128MB	8MB	-----	136MB
8MB	8MB	8MB	24MB
16MB	8MB	8MB	32MB
32MB	8MB	8MB	48MB
64MB	8MB	8MB	80MB

168-pin DIMM (3.3V) – SDRAM or EDO DRAM

Bank0 (DIMM3)	Bank1 (DIMM2)	Bank2 (DIMM1)	Total Memory
128MB	8MB	8MB	144MB
16MB	16MB	-----	32MB
32MB	16MB	-----	48MB
64MB	16MB	-----	80MB
128MB	16MB	-----	144MB
16MB	16MB	8MB	40MB
32MB	16MB	8MB	56MB
64MB	16MB	8MB	88MB
128MB	16MB	8MB	152MB
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	8MB	72MB
64MB	32MB	8MB	104MB
128MB	32MB	8MB	168MB
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	8MB	136MB
128MB	64MB	8MB	200MB
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

3.4 BIOS

The BIOS on the TI5VGA motherboard provides the standard BIOS functions plus the following additional features:

1. DMI (Desktop Management Interface)
The motherboard supports DMI to enable computer system management in an enterprise.

2. ISA Plug and Play (PnP) Extension
Unlike PCI cards which 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 OSes, such as Windows 95. Under Windows 95, the motherboard BIOS must have ISA PnP extension to support the new ISA PnP cards.

3. 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.

3.5 Onboard PCI EIDE

The PCI EIDE controller is part of the VT82686A chipset. It supports PIO mode 3/4 and bus mastering. The peak transfer rate of PIO mode 3/4 can be as high as 17MB/sec. Using HDDs that support bus mastering, the peak transfer rate can reach 22MB/sec. There are two IDE connectors, primary IDE and secondary IDE. With two devices per connector, up to four IDE drives are supported. The VT82686A also supports UDMA33 and UDMA66, a new "synchronous DMA" protocol for faster data transfers.

3.6 Onboard Multi-I/O

The multi-I/O is integrated in the VIA chipset that supports two 16550 UART-compatible serial ports, one high speed EPP/ECP parallel port and one floppy controller. The floppy controller supports 2.88MB format. The I/O port addresses of the serial and parallel ports are programmable via BIOS set-up.

3.7 Onboard Hardware Monitoring

The hardware monitoring function is integrated in the VIA chipset. It monitors the system temperature, voltages and fan speeds. With the use of a system management utility, the hardware status can be checked and warning message can be displayed when there is a problem.

3.8 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 are 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
278 - 27F	Parallel Port #2 (LPT2)
2F8h - 2FFh	Serial Port #2 (COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1 (COM1)

3.9 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 used, DMA1 or DMA3 will be used.

3.10 Interrupt Request Lines (IRQ)

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

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Parallel Port #2
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Software Redirected to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

3.11 Accelerated Graphics Port (AGP) Slot

The TI5VGA motherboard comes with an AGP slot for an AGP VGA card that supports 133MHz 2X mode for AD and SBA signaling to provide high-performance 3D graphic display.

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Chapter 4 Hardware Settings

The following sections describe the necessary procedures and proper jumper settings to configure the TI5VGA motherboard.

4.1 SW1(1-8): CPU Frequency Selector 15

4.2 JP1: DRAM Operating Frequency 18

4.3 JP3, SW2(1-4): CPU Vcore Voltage Selector..... 18

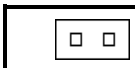
4.4 JP5: Clear CMOS Selection 20

The TI5VGA-100MHz, on the other hand, supports VIA's MVP3 chipset and has a maximum CPU bus speed of 100MHz. Please note the correct settings of both the CPU and SDRAM clocks.

In the case your motherboard TI5VGA-100MHz has a processor supporting 100MHz CPU clock (such as AMD K6-2/300) and your DIMM module is PC100 compliant, the SDRAM clock can be set to 100MHz. Otherwise, set the SDRAM clock at 66MHz.

For the locations of the jumpers, refer to Figure 2 on the following page.

The following examples show the conventions used in this chapter

	Jumper Open
	Jumper Closed

	Switch 1 and switch 2 are set to OFF. Switch 3 and switch 4 are set to ON.

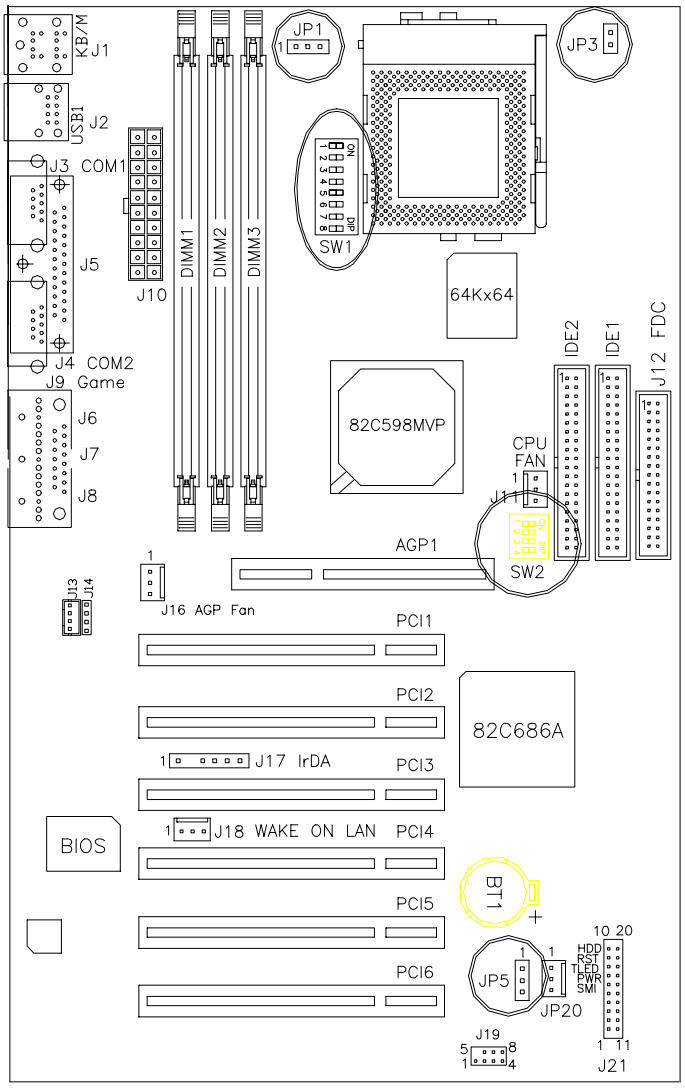
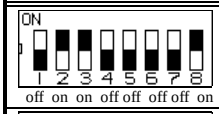
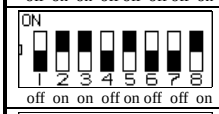
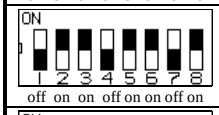
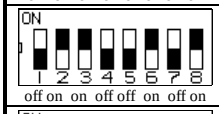
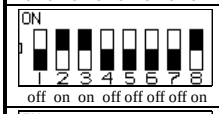
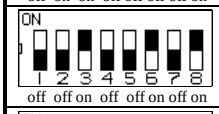
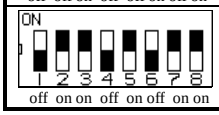


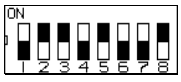
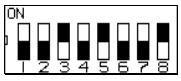
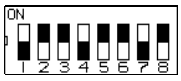
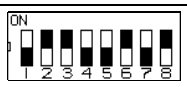
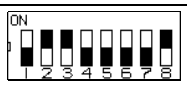
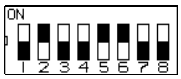
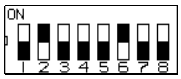
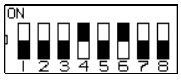
Figure 2: Jumper Locations of the TI5VGA

4.1 SW1(1-8): CPU Frequency Selector

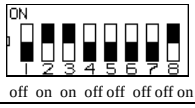
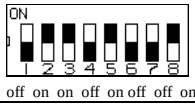
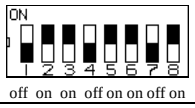
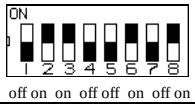
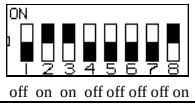
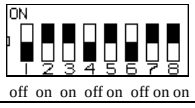
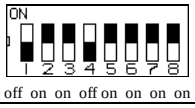
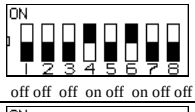
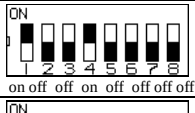
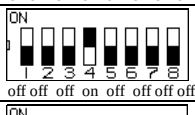
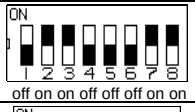
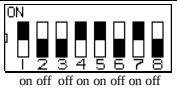
For Intel Pentium, IDT WinChip 2-3D / C6

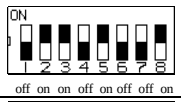
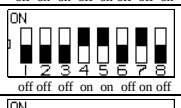
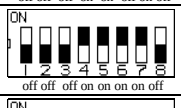
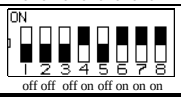
SW1	CPU Clock	AGP Clock	Multiplier	CPU FREQ.
	66MHz	66MHz	1.5x	P54C-100
	66MHz	66MHz	2x	P54C-133
	66MHz	66MHz	2.5x	P54C/P55C-166
	66MHz	66MHz	3x	P54C/P55C-200 WinChip 2-3D / C6-200
	66MHz	66MHz	3.5x	P55C-233
	75MHz	75MHz	3x	WinChip 2-3D / C6-225
	66MHz	66MHz	4x	WinChip 2-3D 266

For Cyrix 6x86, 6x86L, 6x86MX CPU

SW1	CPU Clock	AGP Clock	Multiplier	CPU FREQ.
 off on on off on off off on	66MHz	66MHz	2x	P166+ (133MHz)
 off off on off on off off on	75MHz	75MHz	2x	P200+ (150MHz)
 off on on off on on off on	66MHz	66MHz	2.5x	PR200 (166MHz)
 off on on off off on off on	66MHz	66MHz	3x	PR233 (200MHz)
 off on on off off off off on	66MHz	66MHz	3.5x	PR266 (233MHz)
off off on off on on off on	75MHz	75MHz	2.5x	PR233 (187.5MHz)
 off on off off on on off off	83MHz	66MHz	2.5x	PR266 (208MHz)
 off on off off on off on off	83MHz	66MHz	3x	PR300 (250MHz)
off off off on on on off off	100MHz	66MHz	2.5x	PR333 (250MHz)
 off off off on off on off off	100MHz	66MHz	3x	PR366 (300MHz)

For AMD K5, K6, K6-2 CPU

SW1	CPU Clock	AGP Clock	Multiplier	CPU FREQ.
	66MHz	66MHz	1.5x	PR100
	66MHz	66MHz	2x	PR133
	66MHz	66MHz	2.5x	PR166 / K6-166
	66MHz	66MHz	3x	K6-200
	66MHz	66MHz	3.5x	K6-233
	66MHz	66MHz	4x	K6-266
	66MHz	66MHz	4.5x	K6-300
	100MHz	66MHz	3x	K6-2/300
	95MHz	63MHz	3.5x	K6-2/333
	100MHz	66MHz	3.5x	K6-2/350
	66MHz	66MHz	5.5x	K6-2/366
	95MHz	64MHz	4x	K6-2/380

	66MHz	66MHz	6x	K6-2/400
	100MHz	66MHz	4x	K6-2/400 K6-3/400
	100MHz	66MHz	4.5x	K6-2/450 K6-3/450
	100MHz	66MHz	5x	K6-2/500 K6-3/500

4.2 JP1: DRAM Operating Frequency

JP1		SDRAM Frequency
pin 1-2	short	Run CPU Clock
pin 2-3	short	Run AGP Clock

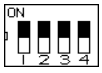
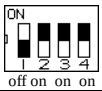
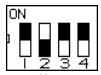
***NOTE**: Set the SDRAM Frequency to **Run CPU Clock** only when the CPU clock is 100MHz and the DIMM modules are PC-100.*

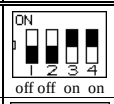
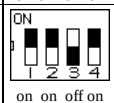
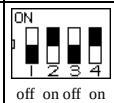
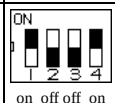
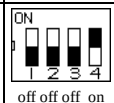
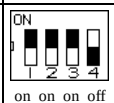
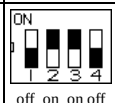
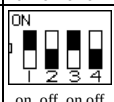
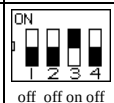
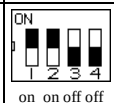
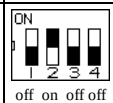
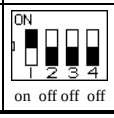
4.3 JP3, SW2(1-4): CPU V_{CORE} Voltage Selector

For Single Voltage CPU:

JP3	SW2	V_{CORE} /V_{IO}	CPU
open		3.5V	Intel P54C, Cyrix 6x86, AMD K5, WinChip C6

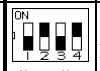
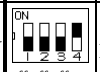
For Dual Voltage CPU:
Intel P55C, Cyrix 6x86L/MX/MII, AMD K6/K6-2, IDT WinChip 2-3D

JP3	SW2	V_{CORE}	CPU
open		3.5V	WinChip 2-3D (0.35μ)*
open		3.4V	
open		3.3V	

JP3	SW2	V_{CORE}	CPU
open	 off off on on	3.2V	K6-233 (0.35µ)*
open	 on on off on	3.1V	
open	 off on off on	3.0V	
open	 on off off on	2.9V	K6-166/200 6x86MX
open	 off off off on	2.8V	WinChip 2-3D (0.35µ)* P55C 6x86L
open	 on on on off	2.7V	
open	 off on on off	2.6V	
open	 on off on off	2.5V	
open	 off off on off	2.4V	K6-3/400/450 K6-2/400/450
open	 on on off off	2.3V	
open	 off on off off	2.2V	K6, K6-2/500 (0.25µ)*
open	 on off off off	2.1V	

* 0.25µ and 0.35µ refer to manufacturing processes.

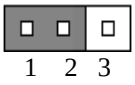
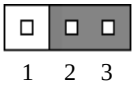
CPU VCORE Voltage (1.30V~2.05V)*

SW2	VCORE	SW2	VCORE	SW2	VCORE	SW2	VCORE
on on on on	2.05V	on on off on	1.85V	on on on off	1.65V	on on off off	1.45V
off on on on	2.0V	 off on off on	1.80V	off on on off	1.60V	off on off off	1.40V
on off on on	1.95V	on off off on	1.75V	on off on off	1.55V	on off off off	1.35V
off off on on	1.90V	 off off off on	1.70V	off off on off	1.50V	off off off off	1.30V

* For CPU VCORE Voltage 1.30V~2.05V, set JP3 to SHORT

4.4 JP5: Clear CMOS Selection

Use JP5, a 3-pin header, to clear the contents of the CMOS RAM. *Note that the ATX-power connector should be disconnected from the motherboard before clearing CMOS.* Do not clear the CMOS RAM unless it is absolutely necessary.

JP5	Function	JP5	Function
 1 2 3	Normal	 1 2 3	Clear CMOS

Chapter 5 Installation

This chapter describes the connectors and interfaces that the TI5VGA provides for creating a working system. Refer to Figure 3 for the location of the connectors.

The following items are covered in this chapter:

5.1 I/O Connectors 23
5.2 J1: PS/2 Keyboard and PS/2 Mouse Connectors 23
5.3 J2, J19: USB Connectors 24
5.4 J3, J4 Serial Ports 24
5.5 J5: Parallel Port Connector 25
5.6 J9, J6, J7, J8: Game Port, Mic In/Line In/Line Out 25
5.7 J10: ATX Power Supply Connector 26
5.8 J11: CPU Fan Power Connector 26
5.9 J12: Floppy Drive Connector 27
5.10 J13, J14: CD In Connectors 27
5.11 IDE1, IDE2: EIDE Connectors 28
5.12 J16: AGP Fan Power Connector 29
5.13 J17: IrDA Connector 29
5.14 J18 Wake on LAN Connector 29
5.15 J20: Chassis Fan Power Connector 29
5.16 J21 Front Bezel Connector 30

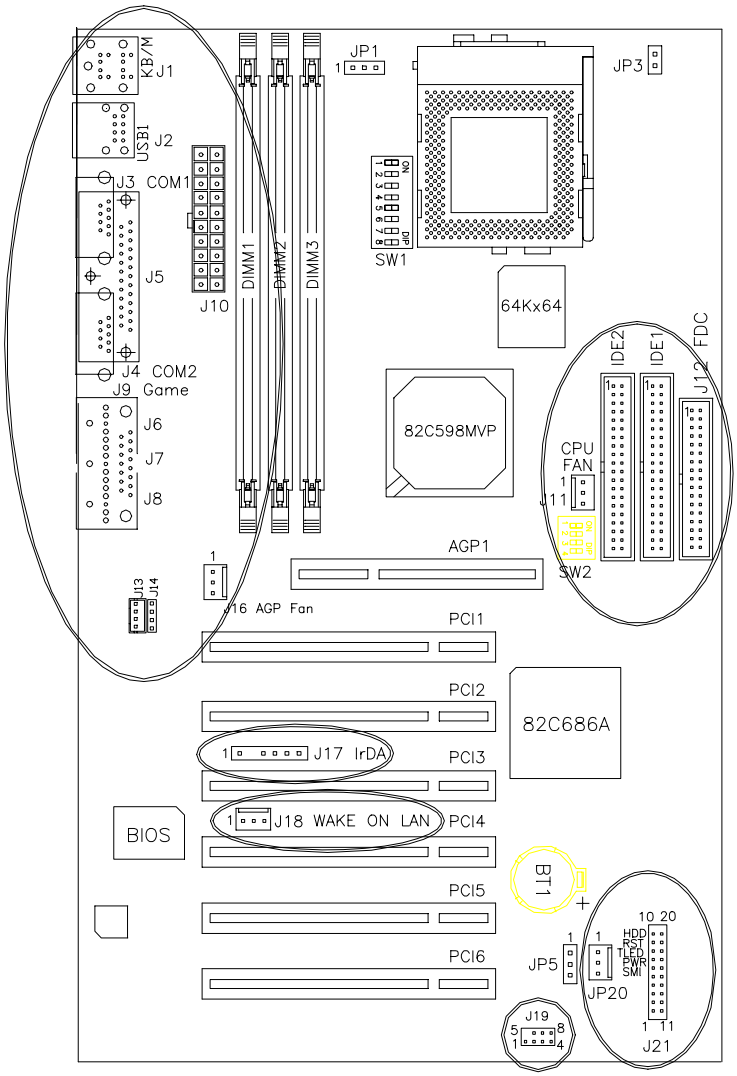


Figure 3: Connector Location on the TI5VGA

5.1 I/O Connectors

The I/O connectors connect the TI5VGA 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.

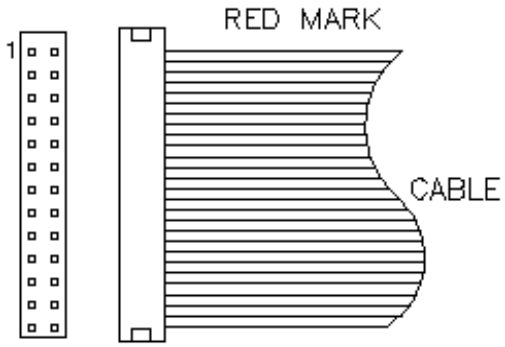
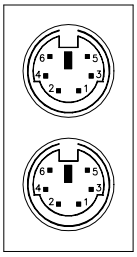


Figure 4: Orientation of the I/O Connector

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



PS/2 Mouse

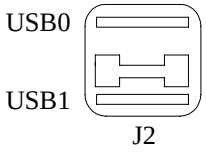
PS/2 Keyboard

Below are the pin-out assignments of the connectors.

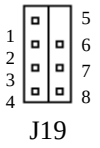
Signal Name	Keyboard	Mouse	Signal Name
Keyboard data	1	1	Mouse data
N.C.	2	2	N.C.
GND	3	3	Ground
5V	4	4	5V
Keyboard clock	5	5	Mouse Clock
N.C.	6	6	N.C.

5.3 J2, J19: USB Connectors

J2 is a standard USB external connector consisting of two stacked ports. J19 is a 10-pin header that supports an optional USB connector that can only be used under Windows 98.



J2 Pin #	Signal Name
1/5	Vcc
2/6	USB-
3/7	USB+
4/8	Ground



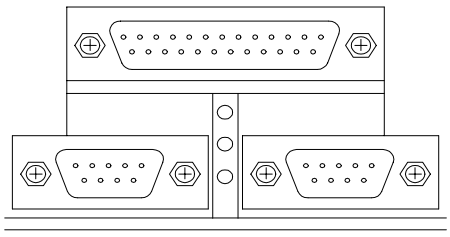
Signal Name	Pin #		Signal Name
Vcc	1	5	No Connect
USB-	2	6	USB-
USB+	3	7	USB+
Ground	4	8	Ground

5.4 J3, J4 Serial Ports

The onboard serial ports J3 and J4, are two DB-9 external connectors. The following table shows the pin-out assignments of these connectors.

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

J5 (Parallel Port)



J3 (COM1) **J4 (COM2)**

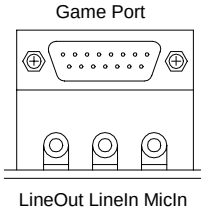
5.5 J5: Parallel Port Connector

J5 is a DB-25 external connector. The following table describes the pin-out assignments of this connector. See the figure on the previous page.

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

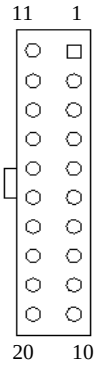
5.6 J9, J6, J7, J8: Game Port, Mic In/Line In/Line Out

J9, J6, J7 and J8 are connectors supporting game port, Line Out, Line In, and Microphone respectively.



5.7 J10: ATX Power Supply Connector

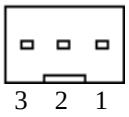
J10 is a 20-pin ATX power supply connector. Refer to the following table for the pin out assignments.



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

5.8 J11: CPU Fan Power Connector

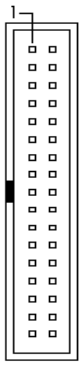
J11 is a 3-pin header for the CPU fan power connector. The fan must be a 12V fan.



Pin #	Signal Name
1	Fan sensor
2	+12V
3	Ground

5.9 J12: Floppy Drive Connector

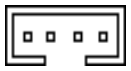
J12 of the TI5VGA is a 34-pin header and will support up to 2.88MB floppy drives.



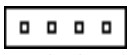
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	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

5.10 J13, J14: CD In Connectors

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



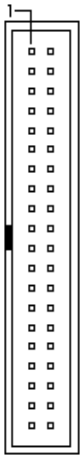
J13



J14

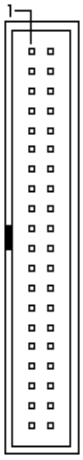
Signal Name	Pin #	Pin #	Signal Name
Ground	1	1	Left
Left	2	2	Ground
Ground	3	3	Ground
Right	4	4	Right

5.11 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	UDMA66 Enable
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

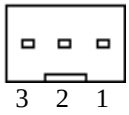


IDE2: Secondary IDE Connector

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	UDMA66 Enable
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

5.12 J16: AGP Fan Power Connector

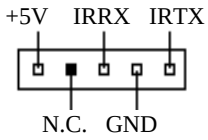
J16 is a 3-pin header for the AGP fan power connector. The fan must be a 12V fan.



Pin #	Signal Name
1	No Connect
2	+12V
3	Ground

5.13 J17: IrDA Connector

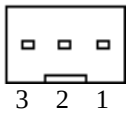
This connector is used for an IrDA connector that supports infrared wireless communication with IrDA devices.



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

5.14 J18 Wake on LAN Connector

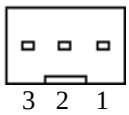
J18 is a 3-pin header for Wake on LAN function on the motherboard.



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

5.15 J20: Chassis Fan Power Connector

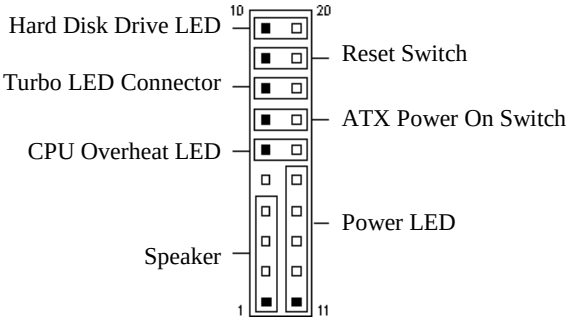
J20 is a 3-pin header for the chassis fan power connector. The fan must be a 12V fan.



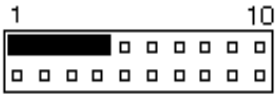
Pin #	Signal Name
1	Fan sensor
2	+12V
3	Ground

5.16 J21 Front Bezel Connector

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. J21 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.



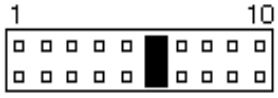
J21 Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED: Pins 11 - 15
The power LED indicates the status of the main power switch. The keylock switch, when closed, will disable the keyboard function.

J21 Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	Keylock
15	Ground

CPU Overheat LED: Pins 6 and 16

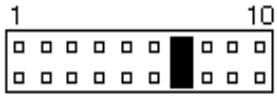
This connector connects to the CPU Overheat LED that lights up when CPU temperature exceeds the CPU warning temperature set in the BIOS. When this occurs, the system slows down until the temperature falls to a safe level.



J21 Pin #	Signal Name
6	5V
16	Ground

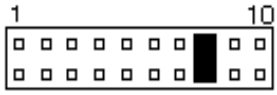
ATX Power ON Switch: Pins 7 and 17

This is an "ATX Power Supply On/Off Switch" that is connected to the power switch on the case. When pressed for more than 4 seconds, the system powers off. When pressed for less than 4 seconds, the system enters the Suspend Mode (depending on BIOS pre-settings).



Turbo LED Connector: Pins 8 and 18

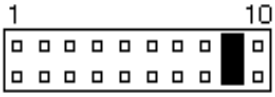
There is no turbo/deturbo function on the motherboard. The Turbo LED will always be On when linked to this connector.



J21 Pin #	Signal Name
8	5V
18	Ground

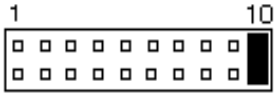
Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning Off the main power and then On. 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 the control panel. The LED flashes when HDD is in use.



J21 Pin #	Signal Name
10	Ground
20	5V

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Chapter 6 BIOS Configuration

This chapter describes the different settings available in the Award BIOS that comes with the TI5VGA motherboard. The topics covered in this chapter are as follows:

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6.1 BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel/Cyrix/AMD processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices 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.

STANDARD CMOS SETUP	CPU FEATURE SETUP
BIOS FEATURES SETUP	INTEGRATED PERIPHERALS
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGEMENT SETUP	USER PASSWORD
PNP/PCI CONFIGURATION	IDE HDD AUTO DETECTION
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. Another section at the bottom of the Main Menu just below the control keys section displays information on the currently highlighted item in the list.

NOTE: After making and saving system changes with Setup, you find that your computer cannot boot, 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) : **Mon**, Aug 19 1996
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
Floppy 3 Mode Support	: Disabled	Other Memory	: 384K
Video	: EGA / VGA		
Halt On	: All Errors	Total Memory	: 16384K

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.

Floppy 3 Mode Support

This is the Japanese standard floppy drive. The standard stores 1.2MB in a 3.5-inch diskette. You have four options to choose:

Disabled	No 3 mode floppy drive installed. (default)
Drive A	Installed 3 mode drive at drive A.
Drive B	Installed 3 mode drive at drive B.
Both	Installed 3 mode drive at drive A and B.

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 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
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Drive	: Enabled	DC000-DFFF Shadow	: Disabled
Boot Up Numlock Status	: On		
Gate A20 Option	: Fast	Cyrix 6x86/MII CPUID	: Enabled
Memory Parity/ECC Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI /VGA Palette Snoop	: Disabled		
OS Select For DRAM>64MB	: Non-OS2		
HDD S.M.A.R.T. capability	: Disabled	ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		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

These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are ***Enabled***.

Quick Power On Self Test
This choice speeds up the Power On Self Test (POST) after you power up the system. If it is set to *Enabled*, BIOS will skip some items. By default, this choice is ***Enabled***.

Boot Sequence
This field determines the drive that the system searches first for an operating system. 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	

The default value is ***A, C, SCSI***.

Swap Floppy Drive
This item allows you to determine whether to enable Swap Floppy Drive or not. 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.

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

Memory Parity/ECC Check
Set this option to *Enabled*, when the memory installed in your system supports ECC (error correction code) or parity. 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. You can select speed range from 6 to 30 characters per second. By default, this item is set to ***6.***

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. In *Setup*, the system boots 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 MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When this field is enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with a 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***.

HDD S.M.A.R.T Capability
This option enables and disables the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) capability of the hard disks.

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 allow optional ROM to be copied to RAM or not.

Cyrix 6x86/MII CPUID
This item enables and disables the CPUID detection for Cyrix 6x86/MII CPU.

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 10ns	OnChip USB	: Enabled
Bank 2/3 DRAM Timing	: SDRAM 10ns	OnChip USB 2	: Disabled
Bank 4/5 DRAM Timing	: SDRAM 10ns	USB Keyboard Support	: Disabled
SDRAM Cycle Length	: 3		
DRAM Read Pipeline	: Enabled	OnChip Sound	: Enabled
Cache Rd+CPU Wt Pipeline	: Enabled		
Cache Timing	: Fast		
Video BIOS Cacheable	: Enabled		
System BIOS Cacheable	: Enabled		
Memory Hole At 15MB	: Disabled		
AGP Aperture Size	: 64M		
CPU Host Clock (CPU/PCI)	: Default		
Auto Detect DIMM/PCI Clk	: Disabled	ESC : Quit	↑ ↓ → ← : Select Item
Spread Spectrum	: Disabled	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Bank DRAM Timing
These fields define the speed of the DRAM memory onboard. Options include *SDRAM 10ns* and *FP/EDO 70ns*.

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

DRAM Read Pipeline
When enabled, this field supports pipelining of DRAM reads The default setting is ***Enabled***.

Cache Rd+CPU Wt Pipeline
When enabled, this item allows pipelining of cache reads and CPU writes. The default setting is ***Enabled.***

Cache Timing
This field sets the timing of the cache in the system. The options are *Fast* and *Fastest*. By default, this field is set to ***Fast***.

Video BIOS Cacheable
Select Enabled allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

System BIOS Cacheable
Select Enabled allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

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.***

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 default setting is ***64M***.

CPU Host Clock (CPU/PCI)
Default referes to the default settings for the CPU/PCI clock which are *66/33MHz* and *100/33MHz*, depending on the bus speed of the CPU you have installed. If overclocking causes the system to be unstable, use the defaults. Note that *112/37MHz*, *124/41MHz* and *133/44MHz* settings are only supported if your motherboard has an ICS 9148AF-58 clock generator.

> **IMPORTANT NOTE:** When your system does not boot because the CPU has been changed, turn off the computer by pressing the power button and turn it on again by pressing the **Insert** key and the power button simultaneously. (*Note to press the **Insert** key until an image appears on the screen.*) When the system is turned on, press the **Delete** key to enter BIOS Setup and configure the CPU speed.

Auto Detect DIMM/PCI Clk
When enabled, the system automatically shuts off clocks of unused DIMM/PCI slots. This field is for CE testing use only.

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

OnChip USB / OnChip USB 2
This field allows you either to enable or disable the USB function.

USB Keyboard Support
This field has a default setting of ***Disabled***.

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***.

6.6 Power Management Setup

ROM PCI/ISA BIOS (2A59IM29)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

ACPI	: Enabled	Primary INTR	: ON
Power Management	: User Define	IRQ3 (COM2)	: Primary
PM Control by APM	: Yes	IRQ4 (COM1)	: Primary
Video Off Option	: Suspend -> Off	IRQ5 (LPT 2)	: Primary
Video Off Method	: V/H SYNC +Blank	IRQ6 (Floppy Disk)	: Primary
Soft-Off by PWRBTN	: Instant-Off	IRQ7 (LPT 1)	: Primary
PWRON After PW-Fail	: Off	IRQ8 (RTC Alarm)	: Disabled
** PM Timers **		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)	: Primary
HDD & FDD	: ON	ESC : Quit	↑ ↓ → ← : Select Item
PCI Master	: OFF	F1 : Help	PU/PD/+/- : Modify
PWR-ON By Modem/LAN	: 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 (Advanced Configuration Power Interface) function on the motherboard.

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

Disabled	No power management.
Min. Power Saving	Minimum power management.
Max. Power Saving	Maximum power management. Only available for SL CPU.
User Define	Each of the ranges are 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 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, PWR-ON By Modem/LAN, 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 increase 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***.

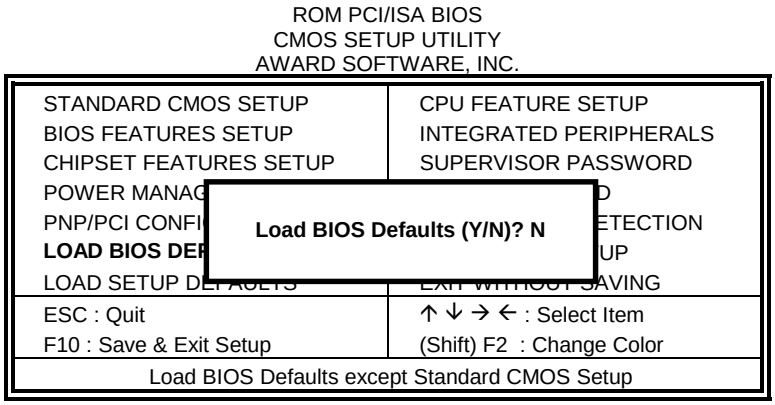
AGP Master 1 WS Write
When enabled, writes to the AGP bus are executed with 1 wait states. By default, this field is set to ***Enabled***.

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

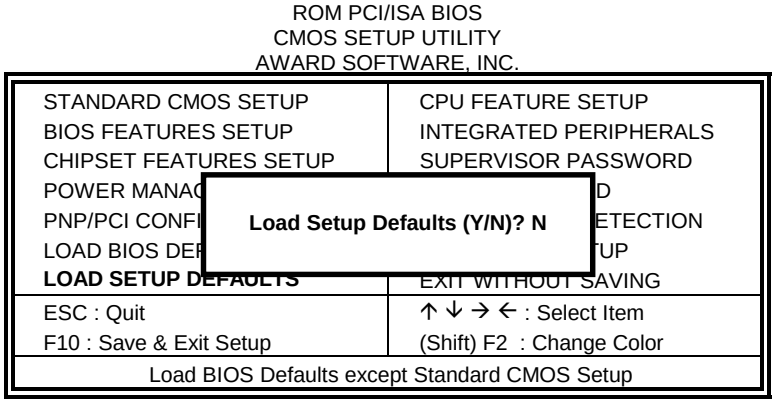
This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.



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

6.9 Load Setup Defaults

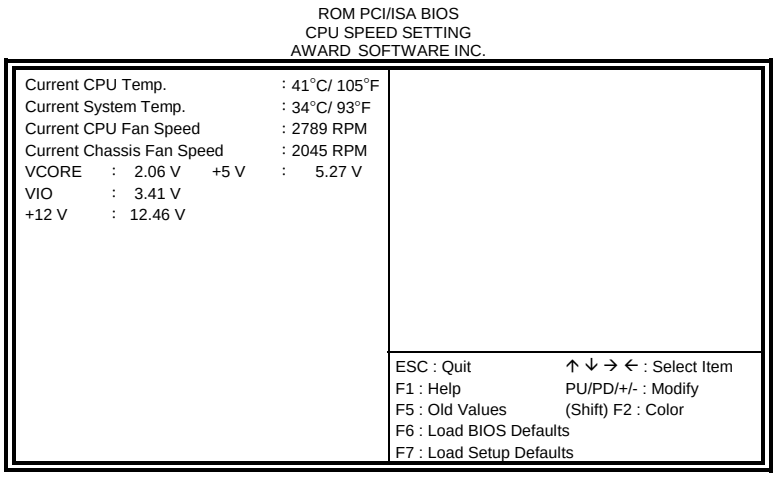
This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.



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

6.10 CPU Features Setup

This Setup menu controls the configuration pertaining to the CPU and system temperature.



Current CPU / System Temp.
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.

Current 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 / +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 First Channel	: Enabled	Onboard Parallel Port	: 378H/IRQ7
OnChip IDE Second Channel	: Enabled	Onboard Parallel Mode	: Normal
IDE Prefetch Mode	: Disabled		
IDE HDD Block Mode	: Enabled		
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Auto	Onboard Legacy Audio	: Enabled
IDE Secondary Master PIO	: Auto	Sound Blaster	: Enabled
IDE Secondary Slave PIO	: Auto	SB I/O Base Address	: 220H
IDE Primary Master UDMA	: Auto	SB IRQ Select	: IRQ 5
IDE Primary Slave UDMA	: Auto	SB DMA Select	: DMA 1
IDE Secondary Master UDMA	: Auto	MPU-401	: Enabled
IDE Secondary Slave UDMA	: Auto	MPU-401 I/O Address	: 330-333H
Init Display First	: AGP	Game Port (200-207H)	: Enabled
Onboard FDD Controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4	ESC : Quit	↑ ↓ ← : Select Item
Onboard Serial Port 2	: 2F8/IRQ3	F1 : Help	PU/PD/+/- : Modify
UART 2 Mode	: Standard	F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

OnChip Primary/Secondary PCI IDE
These fields allow you either to enable or disable the Primary/Secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

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

IDE HDD Block Mode
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

IDE 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.

IDE Primary/Secondary Master/Slave UDMA
This field allows your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

Init AGP Display First
This field allows the system to initialize first the AGP VGA display on the motherboard when system is turned on.

Onboard FDD Controller
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 options are *Standard*, *HPSIR* and *ASKIR*.

Onboard Parallel Mode
This field allows you to determine parallel port mode function.

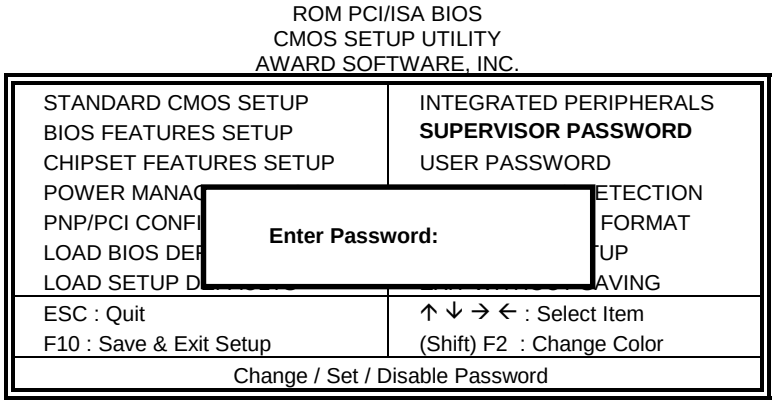
SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port

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, FM Port (388-38BH) and Game Port.

6.12 Supervisor / User Password

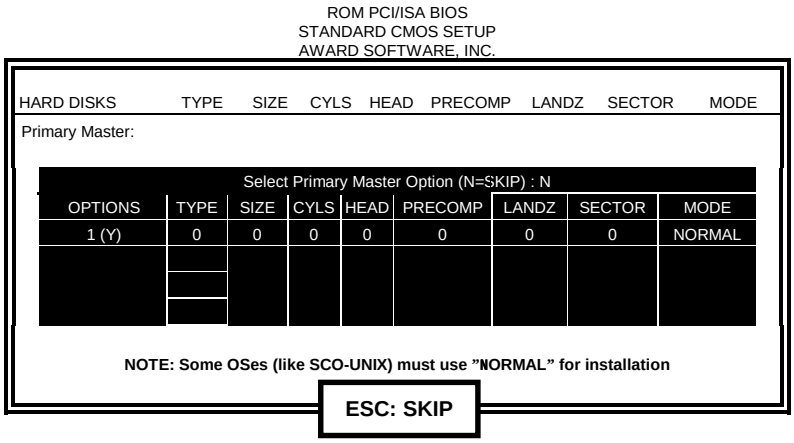
These two options set the system password. *Supervisor Password* sets a password that will be used to protect the system and Setup utility. *User Password* sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The **Enter Password:** 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

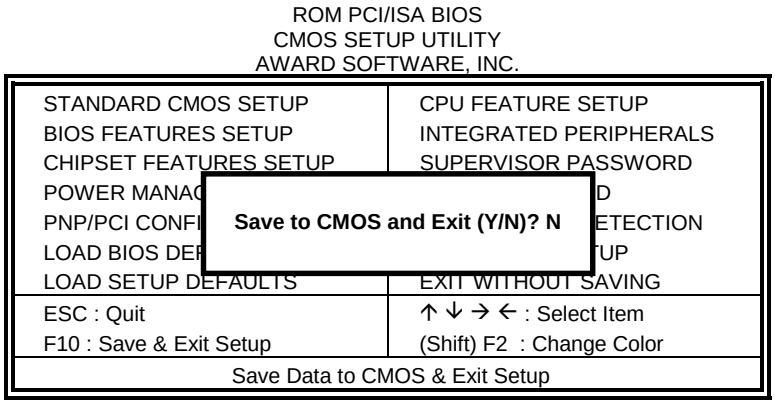
This option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.



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.

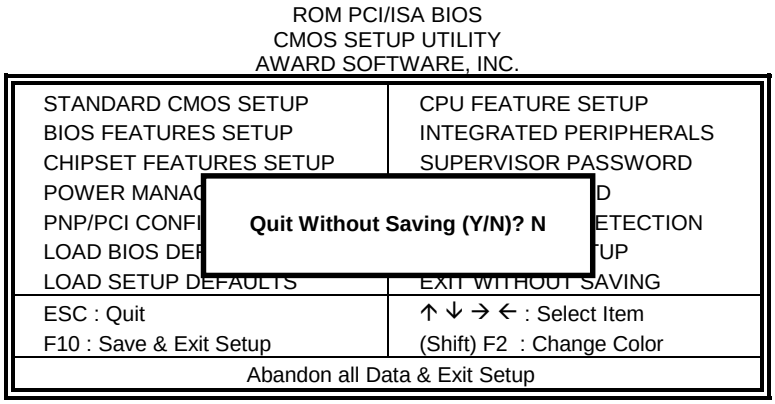
6.14 Save & Exit Setup

This option allows you to determine whether to accept the modifications or not. 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.



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.



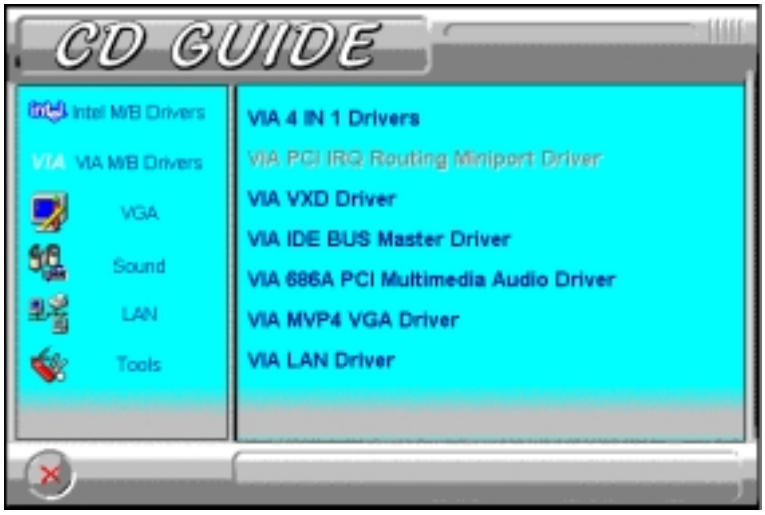
Chapter 7 VIA Drivers and DirectX Installation

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

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.)

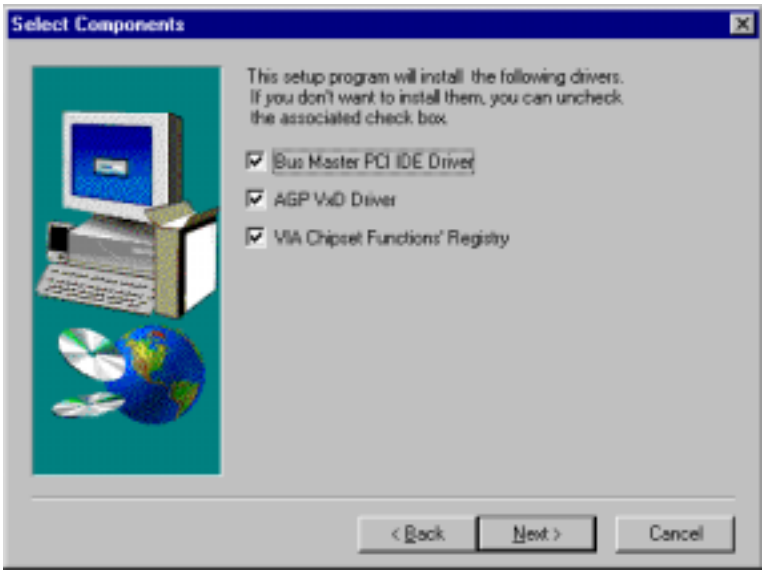
7.1 Windows 95 4-in-1 Driver Installation

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**.

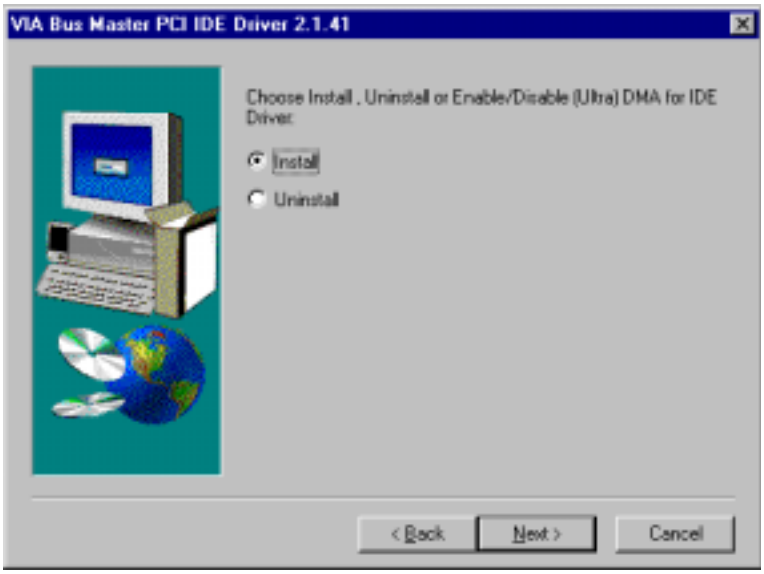


2. Click **Next**. to continue the installation process, and then click **Yes** to agree with the license agreement.

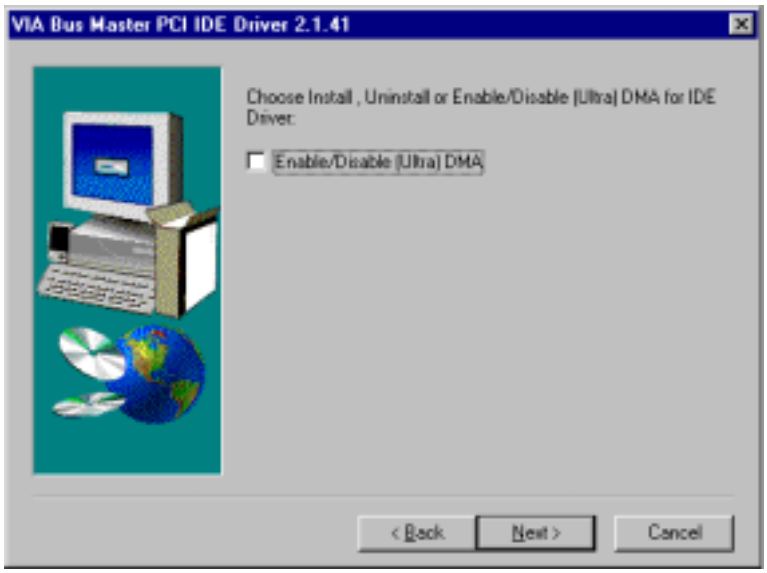
3. Click **Next** to install all the drivers shown below.



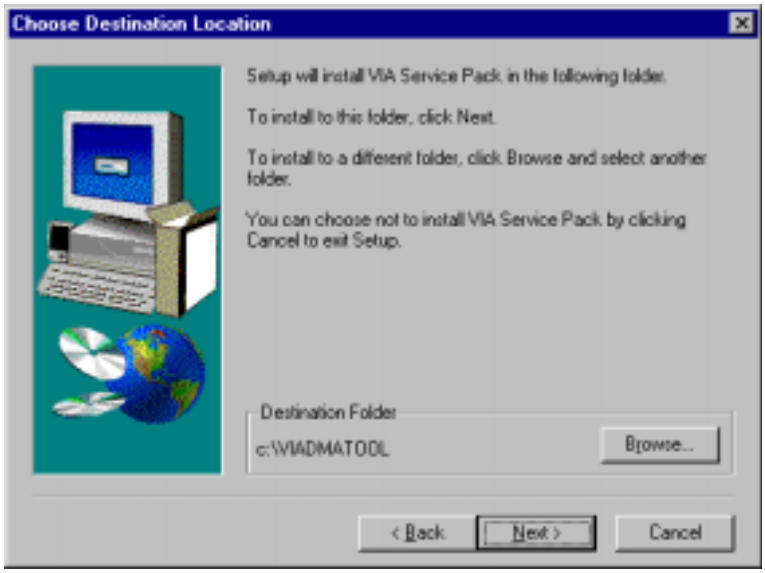
4. Click **Next** to install the (Ultra) DMA for IDE driver.



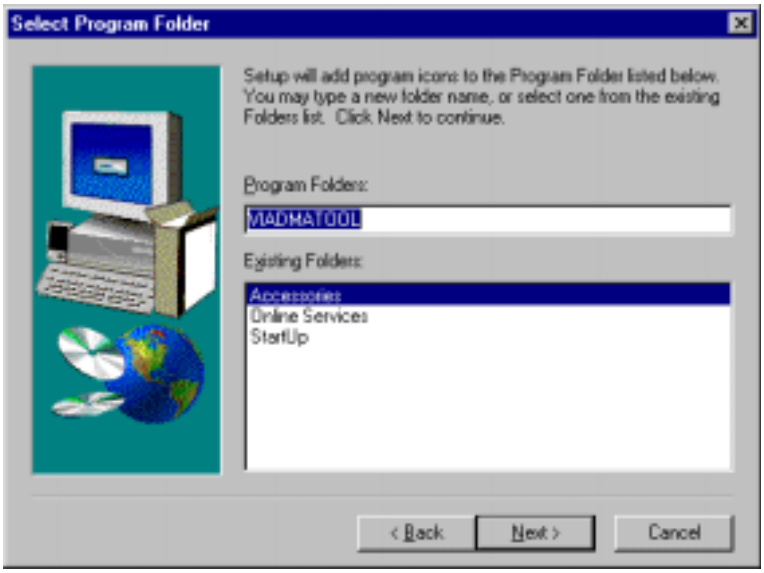
5. Click on the **Enable/Disable (Ultra) DMA** checkbox, and click **Next** to enable (Ultra) DMA.



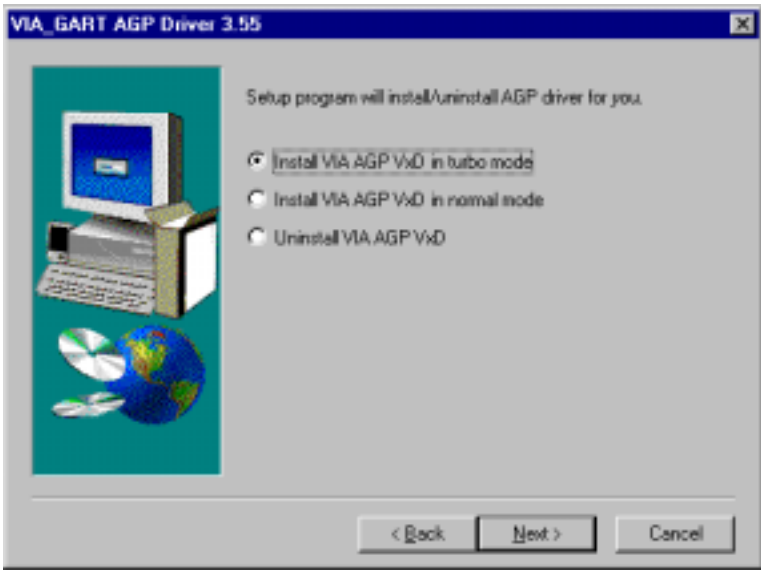
6. To install **VIA Service Pack**, click **Next**.



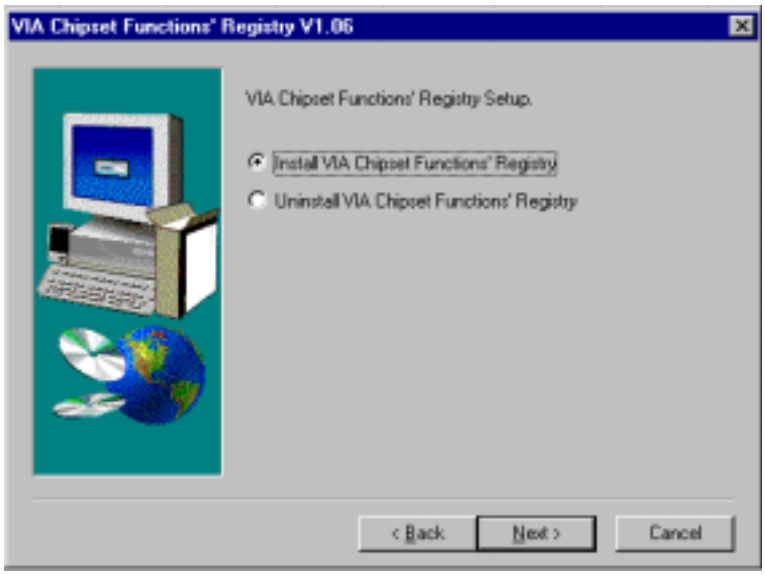
7. Click **Next** to accept the listed folder name or select from the existing folders list, then click **Next**.



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



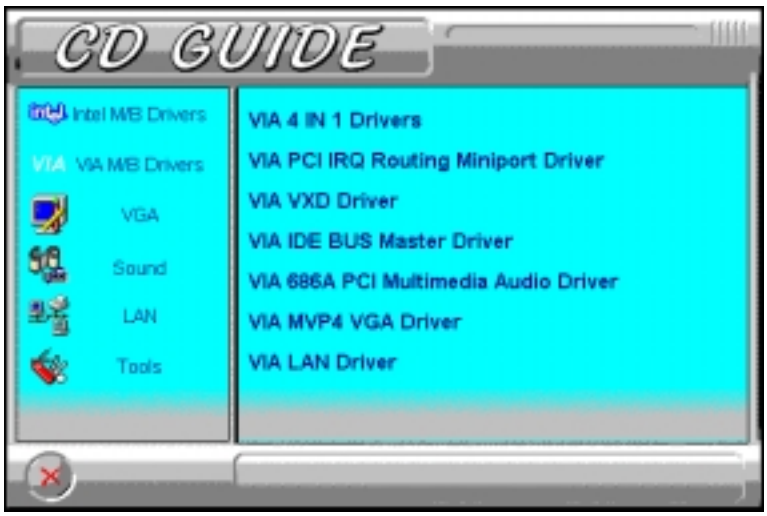
9. Click **Next** to install the VIA Chipset Functions' Registry.



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.

7.2 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.)

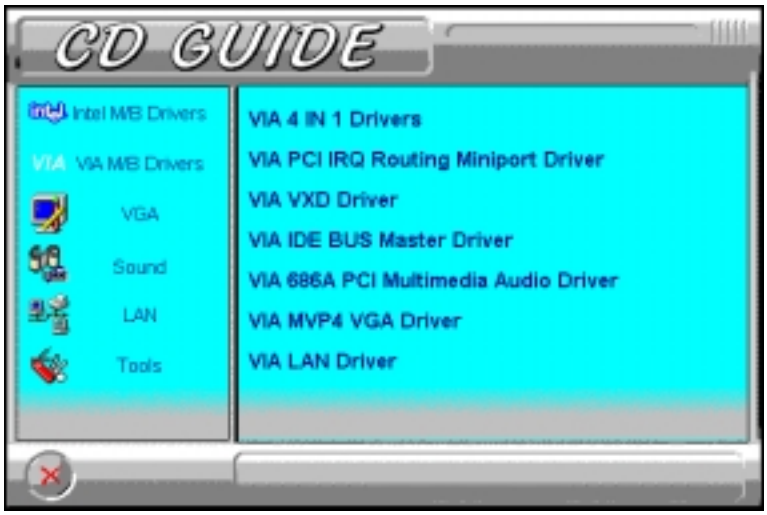
3. To continue with the VIA PCI Audio Driver Installation, click **Next** to agree with the license agreement.

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 and changes to take effect.

7.3 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**.

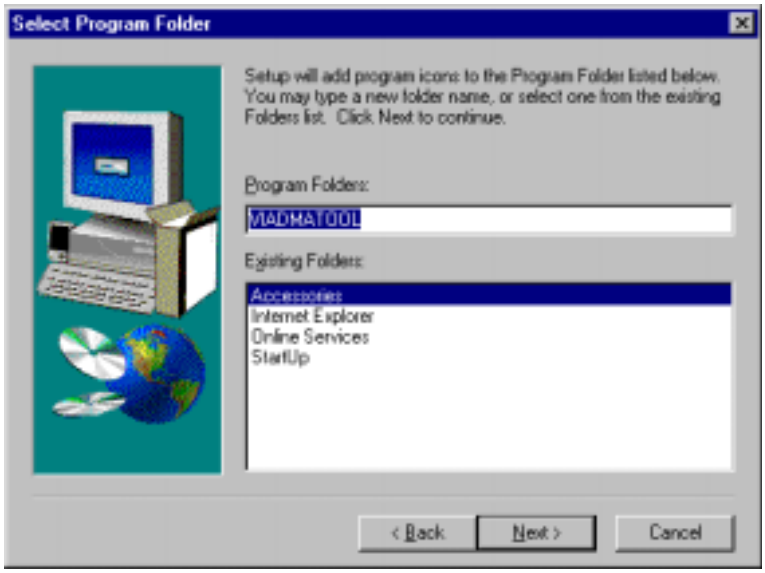
4. Click **Next** for the setup program to install the drivers for Bus Master PCI IDE, AGP VxD, VIA Chipset Functions' Registry and IRQ Routing Miniport Drivers.

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

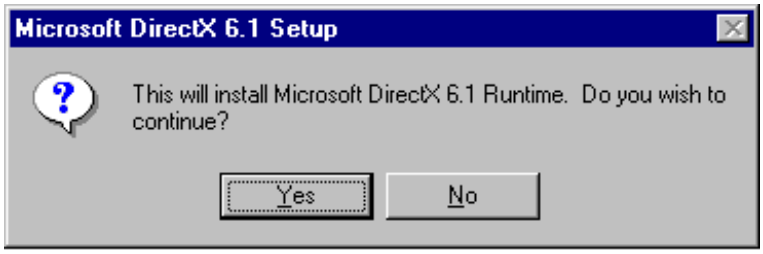
11. When the **IRQ Routing Driver 1.30** window appears, click **Next** to install the VIA IRQ Routing Miniport Driver.

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

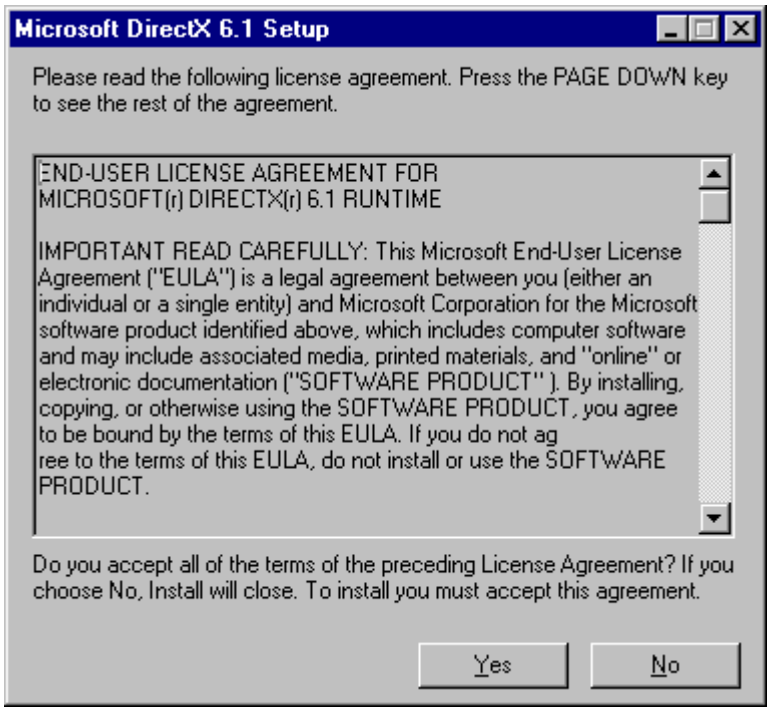
7.4 Windows 98/95 DirectX Installation

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.



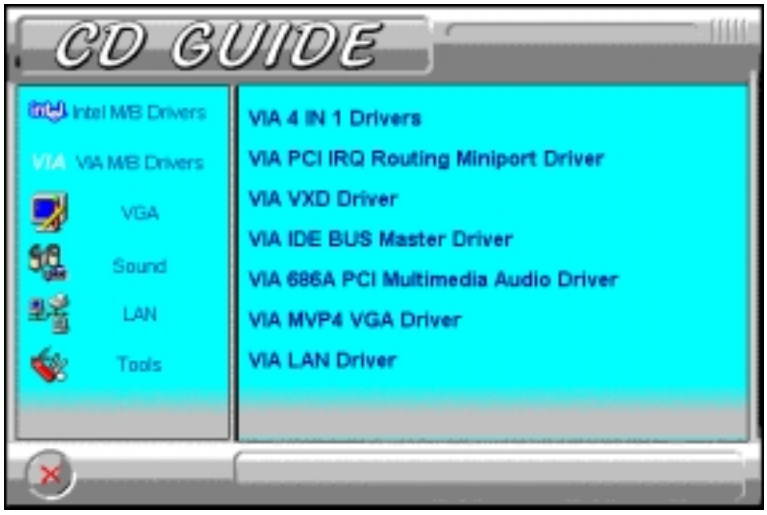
3. Click **Yes** to continue.



4. When DirectX setup is completed, click **OK**.

7.5 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.

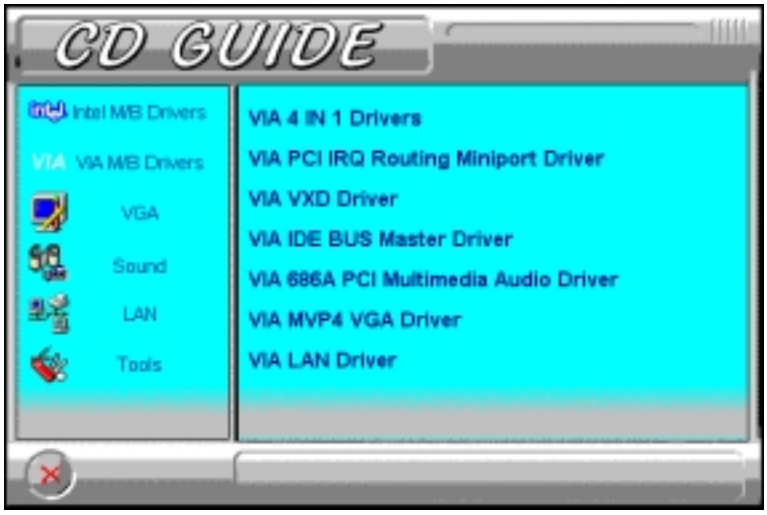
3. The **Select Components** window will appear. Click **Next** to install the audio driver.

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 CDROM and click **OK**.

7.6 Windows 98SE 4-in-1 Driver Installation

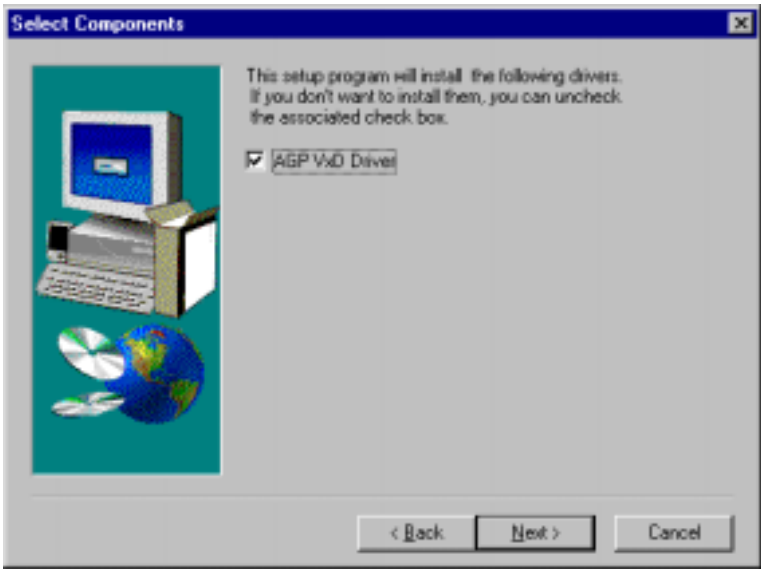
1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selection for Intel drivers and VIA drivers. Click on **VIA M/B Drivers** and the following window will appear. Click **VIA 4 IN 1 Drivers**.



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.*

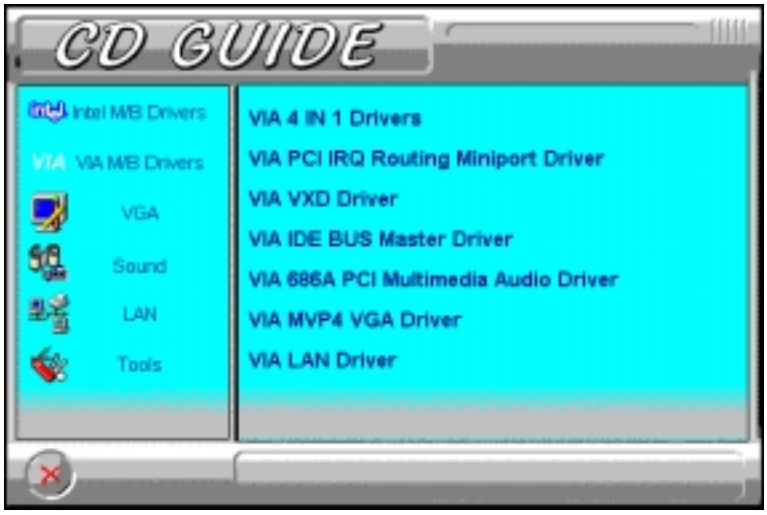


5. When the **VIA_GART AGP Driver 3.55** window appears, click **Next** to install **VIA AGP VxD in turbo mode**.

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

7.7 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.

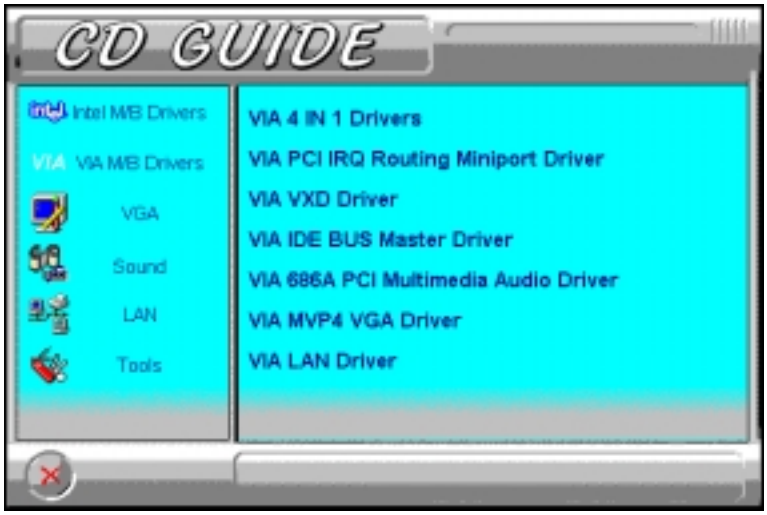
4. After the necessary files are copied, click **Finish**.

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

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.*

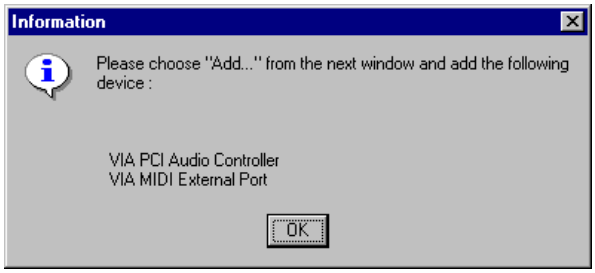
1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on **VIA M/B Drivers** and the following window appears. Click **VIA 686A PCI Multimedia Audio Driver**.



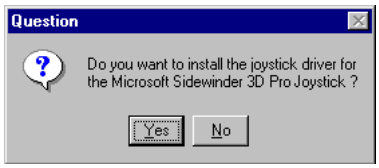
2. When the **Welcome** screen appears, click **Next** to proceed with the audio driver installation.

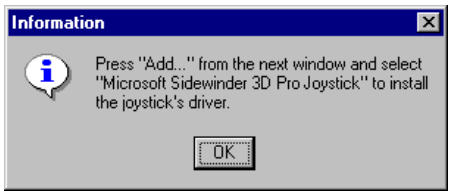
3. The **Select Components** window will appear. Click **Next** to install the audio driver.

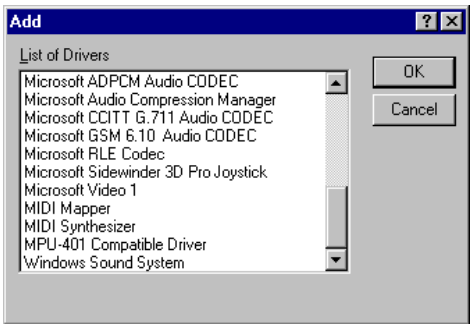
4. When the **Information** window appears, click **OK**. Please choose "**Add…**" from the next window and add the following device: VIA PCI Audio Controller and VIA MIDI External Port.



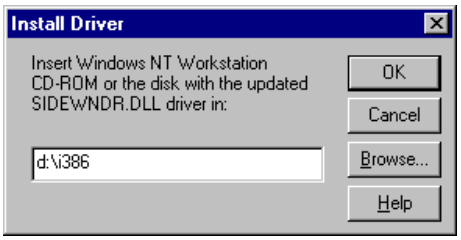
5. After the VIA PCI Audio Controller and VIA MIDI External Port devices are added, you will be asked whether to install the driver for the Microsoft Sidewinder 3D Pro Joystick. Click **Yes.** You will be prompted to press "Add…" from the next window and select "Microsoft Side winder 3D Pro Joystick"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



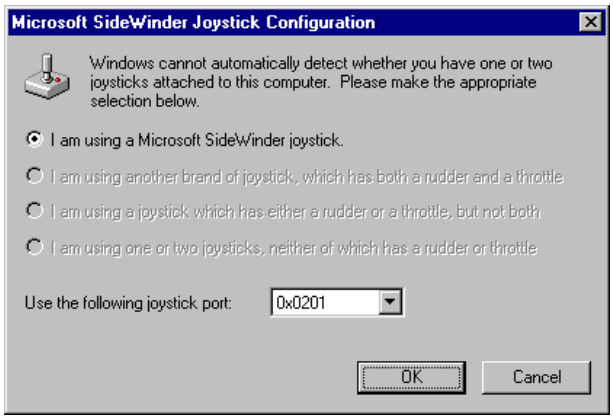




6. Upon adding the **Microsoft Side winder 3D Pro Joystick**, insert the Windows NT CD-ROM or the disk with the updated sidewndr.dll driver.



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.



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Chapter 8 System Monitor Installation

This chapter shows the installation procedure of the System Monitor Utility. The software comes in the CD with the motherboard and is used in conjunction with the onboard hardware monitoring function.

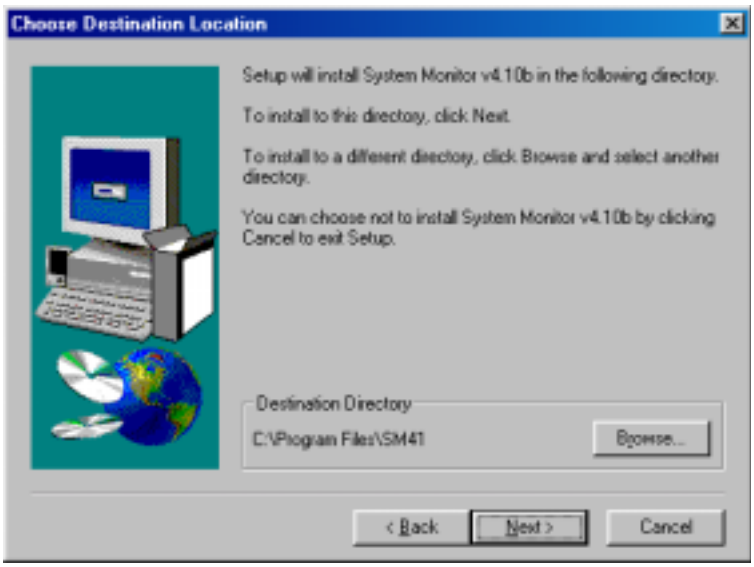
System Monitor is a software utility that oversees the general performance of systems, covering areas like system temperature, system voltage, CPU and system fan rotational speeds. If conditions become adverse, that is, when voltages are erratic or CPU temperature exceeds the safe limits, an alarm will be sounded; thereby preventing system crashing and ensuring overall stability.

Please follow the procedure below on how to install System Monitor.

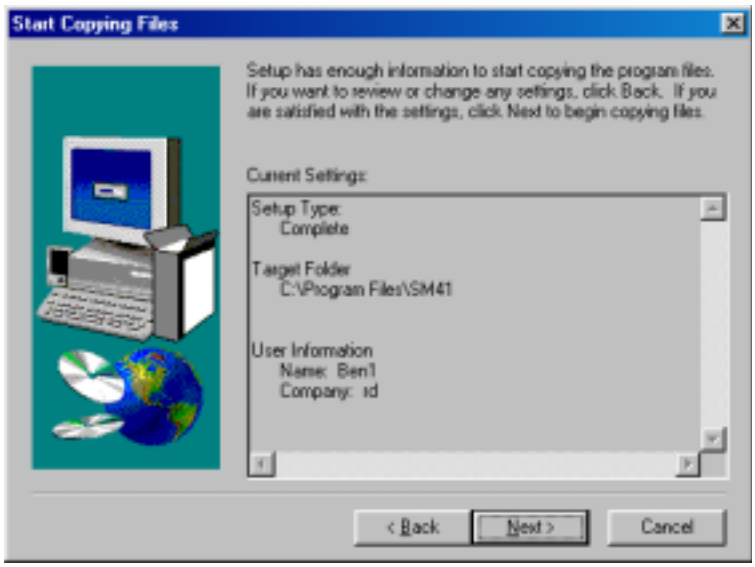
1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on **Tools** and the following window appears. Click **SYSTEM MONITOR**, then **YES** to proceed with the installation.

2. When the **Welcome** screen appears, click **Next** to continue with the Setup program.

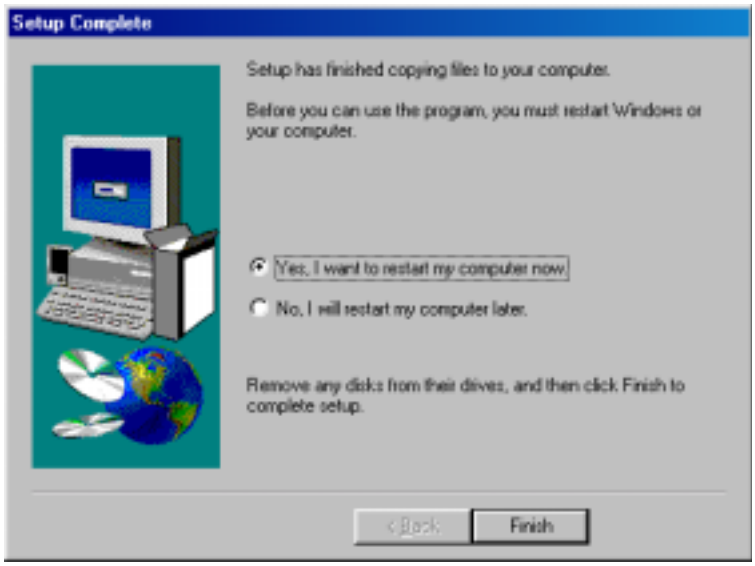
3. Choose the destination location where System Monitor will be installed. Click **Next** to continue Setup.



4. Click **Next** to agree with the settings shown and to begin copying files.



5. Click **Yes** to restart your computer to be able to use the program.



Appendix

A. Additions & Errata

This section is allotted for future page inserts containing any additional information or correction that the users should know.

Important Notes on VIA VxD AGP Driver

1. The user's manual states that in installing VIA_GART AGP Driver, the turbo mode (default) should be selected. However, when system becomes unstable due to this selection, reinstall the VIA_GART AGP Driver and select the **normal mode**. Please refer to the chapter on VIA Drivers Installation Guide.
2. Under Windows 98 Second Edition, it is not necessary to install the VIA VxD AGP Driver. However, in case the system is not functioning properly, install the VIA VxD AGP Driver.